

Registration of New Companies.

The following joint-stock companies have been duly registered:—

ANGUILLA PHOSPHATE COMPANY (Limited).—Capital 50,000, in 100 shares. To acquire lands containing phosphate in the Island of St. Martin's, West Indies. The subscribers (who take one share each) are—Robert Elsdon, 75, Manor-road, Upper New Cross; H. Firmin, Cannon-street; A. A. Layton, Grosvenor-road, Highbury New Park; James Cowell, 13, Queen Victoria-street; C. O. Rogers, 1, Winchester House; W. B. Cobb, 62, Cornhill; and J. Zalmanson, 62, Cornhill.

FOREIGN AND COLONIAL TUNNELING AND PROSPECTING COMPANY (Limited).—Capital 55,000, in 11 shares. To acquire the foreign patents and contracts of the Diamond Rock-Boring Company (Limited). The subscribers (who take 50 shares each) are—F. J. Bolton, Grosvenor Mansions; J. Dodd, M.P., Stockport-on-Tees; D. Kennedy, 3, Clarence-terrace, Regent's Park; Eustace F. Piers, Hatfield, Cheshire; Lyon Playfair, C.B., M.P., 4, Queensberry-place, South Kensington; and T. H. Darvall, 23, Upper Wimpole-street.

STANLEY PATENT FURNACE COMPANY (Limited).—Capital 25,000, in 10 shares. To acquire letters patent in connection with the manufacture of furnaces, &c. The subscribers are—J. M. Stanley, Rhyl, 100; E. Smith, Harrow Cottage, Sheffield, 100; C. G. Smith, Sheffield, 6; H. Horner, Sheffield, 75; R. C. Horner, Sheffield, 25; E. P. Hornby, Mableborough, Yorkshire, 50; and T. Hawley, Sheffield, 50.

THE ANGLO-ARGENTINE BANK (Limited).—Capital 2,000,000, in 200 shares. To establish a bank in the Argentine States, to be called the Bank of the Province of Salta. The subscribers (who take one share each) are—William Roberts, 56, Bernersley New-road; James Poullet, 13, Culmore-road, Old Kent-road; H. R. Tickell, Derwent-road, Peckham; John Boulton, 29, Newgate-street, E.C.; R. A. March, Wilton-road, Dalston; T. H. Powell, 34, Devon-street, Islington; and E. Evans, 9, Stanley-terrace, Holloway.

WARTON LAND COMPANY (Limited).—Capital 150,000, in shares of 100 each. To reclaim and carry out improvements on land near Morecambe Bay, &c. The subscribers are—John Galloway, jun., Manchester, 200; John Galloway, Manchester, 200; E. Park, Todmorden, Yorkshire, 100; J. T. Emmerson, Knaford, 200; John Hall, Adelphi Mills, Salford; W. Slater, Burnage, near Manchester.

A. D. LEAD MINING COMPANY (Limited).—Capital 25,000, in 100 shares. To acquire lead mines in the county of York. The subscribers are—Sir G. W. Denys, Richmond, Yorkshire, 500; G. Ross, Richmond, 10; H. Huntsman, West Bedford Hall, Notts, 10; J. R. Tomlin, Richmond, 10; J. L. Toulmin, 9, Old Burlington-street, 20; W. B. Smith, Reeth, Yorkshire, 10; J. Swan, Newcastle-on-Tyne, 10.

GOTTRE WEN-LANGSNECH MEETHYR SMOKELESS STEAM COAL COMPANY (Limited).—Capital 100,000, in 100 shares. To carry on mining operations in South Wales. The subscribers (who take one share each) are—H. Dunraven, 2, Blomfield-street; W. T. Wilks, Mount-street, Swansea; H. Mansel Smith, Swansea; P. P. Gordon, Pembroke-gardens; J. James, Swansea; J. H. Dudgeon, 6½, Audley-street; J. C. Harris, Clarendon House, Bristol.

METROPOLITAN GRAND HOTEL COMPANY (Limited).—Capital 140,000, in 100 shares. To construct an hotel, &c., near the Metropolitan Railway, Finsbury.

SARATOV WATERWORKS COMPANY (Limited).—Capital 180,000, in 240 shares. To establish waterworks at Saratov, Russia. The subscribers (who take one share each) are—C. Walker, Schuch, 38, Hamilton-terrace, N.; H. Halford, Trigon, Clapham; J. E. Wilkes, Bartholomew House; C. A. Fish, Gresham House; W. Mills, Tafford-road, Peckham; L. White, The Grange, Clapham.

Meetings of Public Companies.

ECONOMIC LIFE ASSURANCE SOCIETY.

The ordinary annual and extraordinary (tenth) quinquennial general court was held at the society's house, New Bridge-street, on Tuesday.

Mr. HENRY BARNETT in the chair. Mr. J. R. GRIMES (the secretary) read the notice convening the meeting, and the annual statements were taken as read. The statement for 1873 showed that the policies issued were 360; declined, 63; not completed, 30—453 proposals. The number of policies remaining in force at the end of the year was 9812, assuring 8,009,814; or, with 736,725, absolute bonus remaining on them, 8,746,539. The new policies assured 261,812, giving new premiums 9085,17s. 8d., raising the total premium revenue to 227,226, 3s. 9d. The total funds amount to 2,861,647, 3s. 2d., and the total income to 364,238, the average rate of interest being 4.9s. 4d. per cent. Claims accrued on 217 policies, assuring 166 lives in the sum of 228,655, including bonus. Out of the 217 policies determined by death, 202, assuring 171,050, carried 45,186, bonus, averaging 26s. per cent. on the sum originally assured, irrespective of the bonuses received in cash or reduction of premium on the same policies.

The CHAIRMAN said that, following the precedent of the last quinquennial meeting, he would suggest that they should proceed without delay to the consideration of the quinquennial report; he would, therefore, at once propose that the statement for the year and auditors' report be received and entered on the minutes.—The resolution was seconded and carried unanimously, and upon the proposition of the CHAIRMAN, seconded by Mr. C. A. COURT REFINOTON, the sum of 100s. was awarded to the auditors for their past services.

The CHAIRMAN observed that the next resolution required, perhaps, a little explanation, as the usual form would have to be altered so as to present two resolutions for the election of auditors. The directors much regretted the loss of their colleague, Mr. Roberts, which had occurred since the notice was sent out; it had, therefore, been the duty of the board to fill up his place, and they had selected Mr. Richard Taylor, who had for many years been one of their auditors. By this a vacancy was created in the list of auditors, which would have to be filled up.

A SHAREHOLDER suggested that the policy-holders should have had notice of the vacancy in the list of auditors so as to have had the opportunity of considering whom it was most desirable to appoint.

The CHAIRMAN explained that this was a peculiar case, Mr. Roberts having died since the notice was sent out; if, however, the proprietors declined to elect his colleague, Mr. Roberts, which had occurred since the notice was sent out; it had, therefore, been the duty of the board to fill up his place, and they had selected Mr. Richard Taylor, who had for many years been one of their auditors. By this a vacancy was created in the list of auditors, which would have to be filled up.

The resolution was seconded and carried unanimously. The CHAIRMAN said that he had now to recommend that Mr. Hugh Mackay Gordon be appointed an auditor of the society. Mr. Gordon had been before the directors for some years through family relations. His father had been a director of the society, two of his uncles had been directors, and he was himself a mercantile man in large business in the City, and would bring these fresh ingredients of knowledge to bear which had been suggested as desirable. Mr. Gordon was willing to accept the office if elected, and he, therefore, submitted the name of Mr. Hugh Mackay Gordon to the meeting.

Mr. HUMPHREYS moved, as an amendment, that the consideration of the question of appointing an auditor be deferred, but, upon the amendment being put, only five voted for it, and the original motion being then put, the appointment of Mr. Gordon was unanimously agreed to.

The directors have much pleasure in presenting to the policy holders the following reports of the results of the tenth quinquennial investigation, which has been made into the affairs of the Economic Society.

Upon the last occasion when the duty devolved upon them of laying before the quinquennial court a statement of the society's affairs for the declaration of a bonus, they had to report a slightly diminished amount of profit realised in the preceding five years. They are, however, on the present occasion happy to be able to show an increase in the ascertained divisible profits, which they trust will be satisfactory to the members.

The directors consider that it may not be out of place to state the principles which have guided them in the administration of the affairs of the society. They have not endeavoured to obtain business by a profuse expenditure, nor have they attempted to keep pace with the excessive competition of the times. Knowing that their premiums have been fixed at the lowest price consistent with a due regard to safety, and that they are the guardians of a great trust, they feel that justice to all demands that no extra risk should be incurred without a proportionate payment, and that no new risk should be taken involving an extra hazard which could not be adequately provided for. It seems to them no less imperative that the lives should be selected with the utmost care which medical skill can suggest, and no attempt has been made to measure a deviation from the strict standard of eligibility by the imposition of an extra premium. The directors, at the end of 50 years of the society's history, firmly believe that the success which has attended their operations, as reported at the several quinquennial courts, has been the natural result of the prudent course adopted. The business which they have succeeded in obtaining has been, if not of the most extensive, of the best class, and the figures now presented abundantly prove that the society are not slow to appreciate what is sound when the merits of the society are brought before its notice.

Another point to which the directors may allude with satisfaction is the investment of the funds. Considering that these now amount to a sum closely approaching 3,000,000 sterling, and that no less than 300,000, annually, on the average, during the last five years has accrued for investment from surplus revenue and periodical repayments of principal—and, further, that all the securities held by the society are of the highest character—it is a matter of much congratulation to all concerned that the funds have been invested at a rate of interest nearly 1 per cent. above that at which the liabilities are valued.

With these brief observations the directors proceed to enumerate the principal facts relating to the past five years. The full details will be printed, in compliance with the requirements of the "Life Assurance Companies Act, 1870," as early as possible, when copies may be had on application.

During the past five years the number of proposals made for assurances has been 2525, and the number of policies issued 2015. The aggregate amount assured by the policies issued has been 1,505,670, producing a new annual premium income of 45,979, 5s. 11d. The policies cancelled were by death 1132, and from other causes 650, making a total of 1782. The aggregate amount originally assured by the policies which have become claims by death was 976,572, and by the other policies cancelled 419,473, making a total from all causes of 1,476,045. Of the policies which have become claims 1038 carried absolute bonuses, amounting to 230,138, in addition thereto bonuses amounting to 156,483, have been extinguished by surrender and otherwise.

There was remaining at Dec. 31 last, assured by 9812 policies, the original sum 8,009,814, and bonus additions outstanding to that date 736,725. The annual sum payable on the policies in force amounted to 219,240, 9s. 8d., against

which there was an abatement to be made for bonuses surrendered of 734, 18s. 6d. per annum.

The invested funds on Dec. 31 last yielded an average rate of interest of 4.9s. 4d. per cent.

The total revenue from premiums and interest during the last five years has amounted to 1,708,030, 18s. 11d., and the total payments, exclusive of the sum paid as claims, have been 210,131, 6s. 1d. Of this latter sum 112,008, 3s. 6d. has been paid for annuity claims, surrender values, and ready-money bonus, leaving a balance of 98,122, 2s. 7d. only as a charge upon the fund provided by the marginal premium for expenses and contingencies.

In the valuation of the assets a sufficient margin has been allowed, as on former occasions, for a possible fluctuation in that portion which consists of public securities, and the reversions and life interests have been again valued on the terms of the original purchases.

The valuation of the liabilities has been made on the same principles and by the same method adopted on former occasions, and the whole of the margin provided by the charged premiums for defraying future expenses and providing a fund for bonus, has been scrupulously included in the valuation of the premiums.

The total assets, consisting of funded property, mortgages, life interests and reversions, office premises, premiums outstanding on December 31, but since paid, interest accrued on investments, balances at bankers and on hand, amount to 2,861,647, 3s. 2d. The total liabilities, consisting of the values of policies and the bonuses already declared, and claims accrued in 1873 but not due, amount to 2,481,563, 7s. 10d.

There is, therefore, after making provision for every known liability, a surplus of 380,083, 15s. 4d. of this surplus has been appropriated as absolute bonus among those entitled to participate, making the requisite reserve towards a bonus at next division on those policies which have not been full five years in force at the present.

The directors further recommend that out of the remaining sum of 30,000, an annual contingent bonus of 1s. per cent. per annum be added to the absolute bonus on such policies now entitled to participate as shall become claims during the current quinquennial period:—

On policies which become claims in 1874, 1s. per cent. on sum assured.

ditto ditto 1875, 2s. ditto ditto

ditto ditto 1876, 3s. ditto ditto

ditto ditto 1877, 4s. ditto ditto

ditto ditto 1878, 5s. ditto ditto

ditto ditto 1879, 6s. ditto ditto

To the policies not entitled at the present division to participate, but on which claims may arise after the payment of five annual premiums before the next division, the directors propose to add a bonus of like amount as if such five annual premiums had been paid prior to the present division.

The same options are offered as at the last division, by which the bonus at present declared may be applied, either—

1.—As an addition to policies on becoming claims.

2.—As a money payment.

3.—To a reduction of the premiums for five years only; or

4.—To a reduction of the premiums for remainder of life.

The sum of 353,083, 15s. 4d. will produce reversionary bonuses amounting to 521,531. The percentage of these bonuses varies according to the durations of the policies, and will range from 4 to 40 per cent. on the sums originally assured, and from 21 to 200 per cent. on the premiums received in respect of which the bonus is allotted.

The directors, in conclusion, invite the policy holders to make known the advantages offered by the society, and the principles upon which it is conducted. It is hoped that these will commend themselves to the policy holders and intending assurers. Persons assuring receive the immediate benefit arising from the low rates of premium calculated expressly for this society, which have been proved by the experience of 50 years to be sufficient not only to meet the risk but also to produce large additions to the sums originally assured. The society being on the mutual principle, the profits are divided solely among the members who assure on the participating scale of premium.—RICHARD CHARLES FISHER, Actuary.

The CHAIRMAN said that, before moving that the report now presented be received and adopted, it was right that he should offer them some few remarks, and he wished first of all to say that the directors had great pleasure in meeting the policy holders in their new house. The room was well filled, and he congratulated them that the house was built upon a similar basis to that of the society, which he believed was a thoroughly substantial one. The fifty years of existence had sufficed to test the soundness of the office, and he had asked Mr. Fisher to extract from the books certain figures, which would, no doubt, be interesting to the meeting. Of those assured in the first year of the society's existence only three or four still remained among them, but they had upwards of 9000 policies in hand. Half-a-dozen facts were worth a volume of argument, and in a business like theirs there was nothing like the ring of hard cash. Last year, when he had almost to console with them as to their progress, he remarked that, as they were dealing with averages, a year or two would, no doubt, set them straight again. This anticipation had already been realised, for the figures of the year 1873 came out excellently well. Their revenue was 12,000, more, and the aggregate sum assured was 8,803,910, against 8,746,000. They were not quite satisfied with the extent of their business, but other companies found that the insurance business had not been so good since the collapse of one or two of the large companies a few years since, but it was now recovering. Last year their claims were 276,000, under the expectation, and their average age 62.3 against 61.8. Comparing the quinquennial periods, he showed that their revenue was 1,638,000, in the five years just ended, against 1,525,000, in the five years ending 1868. The assurance fund was 2,351,000, on Jan. 1, 1874, against 2,639,000, on Jan. 1, 1869, and the rate of interest was 4.6s. 11d. per cent. in the last quinquennium, against 4.9s. 4d. per cent. now. The total claims were 1,177,000, to 1873, against 1,043,000, to 1868. The society was established in 1823, with a nominal capital of 50,000, but the real capital was but 46,250, as from some cause which he could not now find out some shares were kept in the possession of the company. At the end of their first quinquennial period their assets were 110,000, and their liabilities 106,000; in 1833 their assets were 230,000, and their liabilities 193,000; in 1838 their assets were 396,000, and their liabilities 325,000, enabling them to give 42,000, bonus to the assured, and 14,000, to the shareholders. In 1843 their assets were 673,000, and their liabilities 549,000; out of which they paid 64,000, bonus, and 30,000, was applied to the paying off of the shareholders. The beneficial effect of getting rid of the shareholders was felt in the next quinquennium, for in 1848 their assets were 908,000, and their liabilities 725,000, admitting of a payment to the assured of 168,794, whilst 13,000, was reserved for contingencies. And he would take this opportunity of commending it to all life offices to get rid of their shareholders as soon as they can, for after an office is once established the share capital is a great drawback—the share capital absorbing a large portion of the profit which otherwise can go to the assured. In 1853 their assets were 1,357,000, and their liabilities, 1,072,000, the surplus being 285,000, of which 255,000, went to the assured. In 1858 their assets were 1,840,000, and their liabilities 1,517,000, and of the surplus 304,000, went to the assured, and 17,000, for the contingent fund. In 1863 their assets were 2,315,000, and their liabilities 1,964,000, and of the surplus 329,800, went to the assured. In 1868 their assets were 2,665,000, and their liabilities 2,336,000, the surplus permitting of the payment of 308,000, to the assured, and the reservation of 20,000, for contingent bonuses. And in 1873, as the report now presented showed, their assets were 2,996,594, (he was sorry they had not got 3400, more to make up the 3,000,000), and their liabilities 2,613,000; and of the 383,083, surplus they proposed to give 353,000, to the assured, and reserve the amount of 30,000, for contingent purposes. He thought they would agree with him that the society was in a very satisfactory position. The present surplus exceeded by 30,000, any surplus that they had ever made before. Although in the figures submitted at the last annual meeting there appeared to be a slight diminution they were really in an improved position, because, although the figures showed a diminution of income, it was found that at the same time they were getting rid of a weight of liability which had pressed heavily upon them—that was to say, many policies carrying large bonuses had been disposed of. He could only consider that they had been doing a gigantic co-operative business, and the fact that they had in hand an amount equal to one-third of all their liabilities was more than sufficient to establish the soundness of the society. They had taken such means as they could to make known to the world at large the benefits of the society, and he might observe that in a mutual concern like their own each might contribute to his own advantage by getting others to participate with him. He could only say that the full attention of the directors had been given to the promotion of the best interests of the society. A gentleman had said that new blood might be necessary, but he was sure that the stake of the directors and their endeavours to promote the welfare of their society would suffice to ensure for the board the same measure of confidence they had hitherto received.

A SHAREHOLDER enquired whether the interest upon the outlay for premises was charged as rent in the accounts, and suggested that all policies should be indispensible after they had been in existence some number of years to be fixed upon, and that the amount paid for commission should be included in the item of office expenses.—The CHAIRMAN explained that they had arranged to write off the outlay on freehold and premises account by annual instalments extending over 50 years; this was equivalent to charging rent. As to the indispensible character of the policies, they were so at present, for except in the case of fraud &c. &c. they would never dispute a policy; age, &c., was never challenged in the payment of a claim.

They found that the payment of commission was unavoidable, but they had much reduced their expenditure under that head by paying 15 per cent. on the first premium, instead of 5 per cent. upon the premium received each year.

Mr. GEE said that at the last meeting it was proposed to engrave the system of endorsement assurance upon the society's other business, and he would like to know what had been done in the matter.

The CHAIRMAN was not sorry the question had been raised, but the fact was the staff had been so occupied in getting out the quinquennial figures that the board had not come to a final decision. Endowment and other classes of assurance had, however, occupied the attention of the directors, and the new prospectus, which they proposed shortly to issue, would, he believed, meet the views of the policy-holders.

The resolutions for distributing the sum of 383,083, 15s. 4d. as bonus, for applying 30,000, to provide for the annual contingent bonus, and for re-electing Mr. Richard Taylor (provisionally appointed by the board) a director, were unanimously carried, and the best thanks of the meeting were unanimously voted to the Chairman and directors.

The CHAIRMAN, in acknowledging the vote, referred to the change in the day of meeting, and stated that some had complained of the change. It was made to suit the policyholders, but the board would return to the Saturday if wished. (The whole meeting were in favour of meeting on the Tuesday.) He continued that he must ask them to add to the thanks which had been so kindly voted to the board their thanks to their secretary, actuary, and staff. They had given the board entire satisfaction, and he would not like the meeting to separate without giving them that acknowledgment. The diligence and energy of Mr. Fisher, their secretary, could not be exceeded, and as Mr. Fisher's family extended far beyond their own society he need not say that he was confident that all his calculations were reliable.

The votes having been cordially given and suitably acknowledged, the meeting separated.

JAVALI COMPANY.

The sixth ordinary general meeting of shareholders was held at the Cannon-street Hotel, on Tuesday.

Mr. CHARLES M. I. POLLOCK in the chair. Mr. EDWARD SCHUBERT (the secretary) read the notice convening the meeting.

The report of the directors regretted that circumstances beyond their control would not enable the accounts to show a more favourable result. The debentures which fell due last year were very generally renewed, and those that were not were taken up by the chairman. The steam-engine which has been frequently referred to is completed, and will be at work this month. The directors have practised the strictest economy.

The CHAIRMAN said within the last two hours the board had been informed that Mr. Hall, their worthy chairman, was ill to attend the meeting, and he (Mr. Pollock) had been requested to occupy the chair upon this occasion. The report and accounts showed very clearly the actual position of the company; the item of balance of loss on working, amounting to 1799, required some explanation. When, on March 9, 1873, a steam-engine and ten extra stamps were sent out it was hoped that by getting them to work before the dry season set in they would have turned the corner, but circumstances arose which prevented the machinery arriving in time, besides which the dry season set in rather earlier than usual; the consequence was that for four months they were unable to do any work at all. That, however, would not occur again, as they were provided for working throughout the twelve months of the year. Another hindrance and difficulty had been the war between the Costa Ricans and the Nicaraguans, which, although not near the mines, had abstracted labour, but Capt. Sohns, was allowed to keep 20 native labourers, so that with the Germans they were able to keep the ten stamps at work. But now, as far as their prospects were concerned they were fair, and, according to the last letter from Capt. Sohns, the engine and 30 stamps would be at work, and he hoped by this time they had their full supply of labour. During last year, gold to the value of 7483, had been produced, and there had been sent out a very large amount of machinery, written for by Capt. Sohns, which had cost 1300. Capt. Sohns having asked for leave of absence, wishing to return to this country in order to settle some matters in connection with the death of his uncle, the directors had been obliged to send out a gentleman for a few months to take Capt. Sohns' place; they had also sent out nine more Germans, at a cost of 40s. per man, each of whom did twice the work of a native, while their wages were very little more. Having stated that measures had been taken to obtain a quotation for the shares on the Stock Exchange, he moved that the report and balance-sheet be received and adopted.

Mr. HENRY SEWELL seconded the proposition. Mr. TAYLOR said it appeared to him that the company was in debt 22,000, so that the Chairman's statement, that they were now clear seemed to require some explanation.

Mr. WOODHOUSE (the auditor) in explanation of the accounts, stated that the previous expenditure and the loss upon the year's working were brought up to the end of 1873, and included in the general balance-sheet.

The CHAIRMAN believed that the mode in which the last balance-sheet was made up was objected to, hence the profit and loss account as then suggested had been included. In reply to Mr. Taylor, he mentioned that what he meant by starting fair was that they would be able to work for the whole twelve months, with plenty of machinery and labour.

Mr. TAYLOR said that almost the last words of the Chairman at the last meeting were that steps should be taken to obtain a quotation upon the Stock Exchange—that was twelve months since, and the same thing was now proposed.

The CHAIRMAN said that personally he had always entertained a strong opinion there should be a quotation. An application had been made, and the necessary forms gone through, but the secretary of the Stock Exchange had asked the board to alter the Articles of Association, so far as it authorised them to forfeit dividends if not claimed for three years. There was some doubt whether it was worth while to do this, and the more especially as it had been brought to the notice of the board that the Act of Parliament gave the same power; under these circumstances, an appeal had been made to the Stock Exchange to ask for alteration.

Mr. DREWALL asked if the shares had any market value, and if it was only a nominal value they would perhaps be better without an official quotation. He should also like to know the reason Mr. Baxter and Mr. Salmon had become disqualified as directors?

The CHAIRMAN said that Mr. Baxter and Mr. Salmon had become disqualified by reason of their absence from the board without leave for six months. Both those gentlemen still held their shares.

Mr. TAYLOR asked if the directors had any tangible evidence to back their opinion, from the evidence of the "developments" at the mine, that more remunerative results would be realised?—The CHAIRMAN said that Capt. Sohns' report contained all the information the board possessed as to the position and prospects of the mine, and indicated what was likely to be realised when the steam-engine and 30 stamps were in operation. Capt. Sohns wrote every mail, and in strong terms, of the prospects of the mine; and he (the Chairman) thought they were just now turning the corner.

In reply to further questions, the CHAIRMAN stated that Capt. Sohns was paid a salary of 450, per annum, but he would be home in a couple of months, when the shareholders would be again called together to hear from his own lips a description of the position and prospects of the mine.

Mr. HENRY SEWELL said the prospects held out by Capt. Sohns justified the directors appealing to the shareholders to subscribe additional capital. The board could not make any promise, but they did hope that with the machinery, which they believed was now in active operation, the results so long anticipated would be realised. They were safe for the dry season, they had 50 per cent. increased stamping power, and an augmented European labour force, rendering them independent of native labour. Under those circumstances, without being too sanguine, they had every reason to expect a double yield of gold, but if they made a very considerable reduction from that, the mine would be yielding very excellent and very profitable results. He had backed his opinion by increasing his holding in the company.

The CHAIRMAN said they were now earning an average profit of 15s. per month, and when in full work, as in August last, the profit was 900. According to Capt. Sohns' last letter the mine was widening very much, and there was plenty of room for extensive workings.

Mr. HUGHES said that even according to the accounts now before the meeting, after writing off the interest upon debentures, a profit was shown, and no doubt the very large profits would begin to be shown. The directors had given their time without remuneration, and therefore could not be blamed for circumstances over which they had no possible control. They could not do better than confide in their directors, and those who knew them were perfectly satisfied to leave everything in their hands. They showed their confidence in the ultimate prosperity of the company, by subscribing additional capital, and especially the chairman, Mr. Hall, to whom the thanks of the shareholders were more especially due. He hoped the shareholders would subscribe liberally, in which case he believed the company would become one of prosperity.

The report and accounts were received and adopted. Some discussion took place as to the advisability of holding half-yearly meetings, when it was put as a recommendation that the general meetings in future be held half-yearly.—The retiring directors, Messrs. Hall and Harding, were re-elected.

Mr. WOODHOUSE was re-elected auditor.

A special general meeting was then held for the purpose of passing resolutions authorising the directors from time to time to borrow on behalf of the company, in the name and for the purposes of the company, such sum or sums of money, in such mode and upon such terms, either as to time of repayment, rate of interest, nature or mode of security, or otherwise, as the directors shall think fit or expedient but not exceeding in the whole the sum of 20,000.

The CHAIRMAN said that this was at present merely a formal matter, and would be brought before an extraordinary general meeting, to be convened when Capt. Sohns arrived in this country. The proposed 20,000, would enable them to pay off the 10 per cent. debentures, also the heavy debt due to Mr. Hall, who thinks he will be able to raise the additional sum now proposed. When the proper time came the shareholders would have all the necessary information sent them. He would merely move the resolution embodied in the notice convening the meeting.

The manager, in his last report, says—I ordered at once a steam-engine for working the mill during the dry season, and I am happy to inform you that we shall have no more stoppages the whole year round. The engine itself is at work, complete, and only the fire-bricks and chimney for the boiler have not yet arrived at Greytown. It will be too late to have it erected, as I expect the wet season to set in before these things arrive here, and I have concentrated all labour to erect as soon as possible the new stamps; and after this is complete I intend

to commence setting the boiler and erecting the engine, so that we shall have no more interruption to our monthly remittances. Mr. Smeddle, the new manager of the Chionates Consolidated Mining Company, a gentleman who works only for the interest and development of his establishment, took up with great interest the project to form a reservoir as soon as he heard it mentioned; but as our company has already had, in the last two years, heavy outlays for new machinery, &c., I had not advised to go on with it at present, but reserve this improvement for another time. As to profit, Capt. Sohns adds that \$285½ ozs. of gold will be obtained by 30 stamps running in one year. The value of this will be (say) 19,500; the deduct 7500 for working expenses at the mine, leaves us a profit of 12,000. The office expenses in England, together with the few stores sent out here, will be (say) 1000, thus making a clear profit of 11,000. But after some time we shall have 1000, thus still further increased by the erection of the tailing mill, which I calculate to give a result of from 100 to 150 ozs. of gold per month, making about 1500 ozs. more in the year. The value of these 1500 ozs. will be (say) 3525½, added to the profit stated above, will increase the total profit to 14,525½.

Mr. H. SEWELL, in seconding the proposition, said the directors felt perfectly justified in appealing to the shareholders, as well as the public, for the additional capital to enable them to carry on the operations at the mine with vigour and energy. All the energy and cash this last year or two had come from the directors' side of the table, and he was bound to say, nearly the whole of it from their side of the table. (Hear, hear.)

The CHAIRMAN, in reply to questions, stated that the average yield of the quartz during 1871 was 7 dwts. 13 grs., and in 1872, 6 dwts. 8 grs. per ton, the average of 1873 had not yet been made up. He added that in August, 1873, the average rose to 8 dwts., which yielded a profit upon the month of 900l. He also stated that Capt. Sohns was of opinion that the quartz was likely to become very much richer. The resolution was then put and carried unanimously.

A vote of thanks to the Chairman and directors concluded the proceedings.

BEDFORD UNITED MINING COMPANY.

At the four-monthly general meeting of shareholders held at the office of the company, Cornhill, on Wednesday, (Mr. R. McCALLAN in the chair) the statement of accounts brought up to the end of February, 1874, showing a cash balance in hand of 1644. 4s. 9d., and an estimated balance against the mine of 5334. 4s. 8d., was passed and allowed.

The CHAIRMAN, in proposing that the accounts be now received and adopted, congratulated the shareholders on the improved prospects of the mine generally, more especially with regard to the splendid course of ore in the midway level above the 115 ft. level, and the cheering prospects of the south lode, which it is anticipated will ere long prove to the adventurers that there is more than one valuable lode running through the sett. Although mining is at present under a cloud, it is believed that even with the present price of copper the mine will now be able to take care of itself, and there is reasonable hope that no further call will be required beyond the small sum necessary for present obligations.

Mr. T. B. LAWS (the secretary) stated that although there was a balance against the shareholders at this meeting of 5334. 4s. 8d., the actual loss on the last five months' working, or 20 weeks, was only 1214. 7s. 11d., and it gave him much pleasure to state that he firmly believed that for the future both ends would meet.

There was some little discussion as to the amount of the call, but it was ultimately decided that it was desirable to clear off the outstanding liabilities, for which, in the opinion of the CHAIRMAN, the call was made, and Capt. Phillips, the agent of the mine, being present, read his report (which will be found in our columns), and entered into all details necessary for the assistance of the adventurers. His views with regard to the future of this mine gave general satisfaction, and the meeting separated after passing a most cordial vote of thanks to their worthy Chairman.

WHEAL CREBOR MINING COMPANY.

A general meeting of shareholders was held at the offices, 57, Michael's House, on Thursday.

Mr. HARRY EMANUEL in the chair.

Mr. JERU HITCHINS (the secretary) read the notice convening the meeting, and the minutes of the last were confirmed.

The accounts showed a credit balance of 2600. 13s. 7d., including the cost up to the end of February, and assets exceeding liabilities 4034. 13s. 9d.; and it was stated that the subsequent costs were more than covered by the value of the ore since raised.

The report of the agent was read, as follows:—

March 31.—I beg to hand you my report of this mine for your approval, for the meeting to be held on April 2, with particulars of work done since the last general meeting. The 120, east of Cock's shaft, has been driven 9 fms. 1 ft. 6 in.; the lode for 5 fms. of this drive has produced 12 tons of good copper ore per fathom. The last 6 ft. of lode taken down produced from 5 to 6 tons. We have now descended over 3 fms. This drive is being forced on by the side of the lode for the double-fold purpose of getting attle to cover or load the stull, and to save the tramping and hauling, &c. This end will be extended some 8 or 10 ft. further before the lode will be taken down, as this will give us enough attle to load the stull. The length of the ore ground driven through is 19 fms. 3 ft., the lode averaging 7 ft. wide, and producing 4, 6, 12, and 18 tons of copper ore per fathom. In the present state it will produce from 5 to 6 tons of copper ore per fathom, and from 4 to 5 tons of mundle per fathom. The rise in the back of the 120 has been communicated with the winze below the 108, thus giving good ventilation, and has opened up stopping ground. The stope in the back of the 120 west of the rise is worth 200. per fathom; working by six men. The stope east of the rise is worth 300. per fathom; working by six men. In the back of the 120, east of Cock's shaft, a stull has been put in 10 fms. in length, with the stoutest Norway timber that could be obtained on the Cornish coast. The 108, east of Cock's shaft, has been extended 15 fms. 2 ft. 5 in. In this drive the lode varies in size from 2 ft. to 5 ft. wide, and in value from stones of copper ore to 1½, 3, and 5 tons per fm. The present value is 250. per fathom, with a good appearance. The 96 cross-cut south has been extended 2 fms. 5 ft. 6 in. towards the Georgina lode. The stratum is of a most favourable description. Nothing has been done in this level for the last month, the men having been ill. Judging from the bearing of the Georgina lode, as seen in the tunnel, the distance to drive to intersect this lode cannot be far. The 72 east has been driven 4 fms. 1 ft. 9 in. The lode where cut into is from 3 ft. to 4 ft. wide, composed of a good looking capel, quartz, peach, mundle, and a small portion of cubic iron. The men have been engaged for a considerable time in clearing and securing the lobby below the engine-wheel and the attle above the wheel; this work has been put in thorough repair. The men are now placed to cross-cut north in the 72 (the cross-cut is extended 1 fm. 4 ft.). The stratum is highly charged with copper ore. This cross-cut is being put out for the purpose of intersecting the main lode, which we believe is standing in this direction; this is a point of importance, for if a lode should be intersected it will be in the whole ground from the bottom of the mine to surface. The 48 has been extended east 8 fms. 0 ft. 10 in.; the lode for the greater part of the drive has been in a disordered state. The men have been engaged for a considerable time in clearing, mundle, and produces good stones of copper ore, and looks exceedingly kindly to improve. The 38 has been driven 2 fms. 3 ft. 7 in. The lode is disordered by the influence of a cross-course. The rise above the 38 has been put up 3 fms. 2 ft. 6 in., the lode varying in size from 2 to 3 ft. wide. In the upper part of the rise the lode has made a splice. Up to the splice the lode produced 2½ tons of copper ore per fathom. The men are removed from this rise to stope in the back of the 120 fm. level. The tribute pitch in the back of the 48 is producing 2 tons of copper ore per fathom. The whole machinery has been put in thorough repair. The machine-wheel is now nearly as good as new; the grinder-wheel has been removed, and a new one erected, also the water-lift has been replaced, as it was before in a most rotten state. The rods, bolts, &c., have been put in repair, as they were before in a most dilapidated condition. These repairs have taken time and money, but they will not come again for the next 12 years at the least. The next sampling, from present appearances, will be not less than 200 tons of good quality copper ore. In conclusion, I would recommend the following work to be continued:—The driving of the 120 east with full care of six men. This is a point of importance, and judging from the kindly appearance of the stratum early and satisfactory results may be expected. The stopping of the back by the present number of men should be continued. We could not employ these men here before so as to give satisfaction. The driving of the 108 should be forced on as hitherto. The cross-cut in the 72 fm. level should be forced on as hitherto. The cross-cut in the 72 should be continued north by the present number of men. This is a most interesting point, as in our opinion the main lode is standing in this direction. We anticipate a cross-cut of 10 to 12 fms. will have to be driven to prove this point. The 48 to be continued east by the present number of men. On the whole, the prospects of the mine are most favourable.—JONAS GOLDSWORTHY.

Capt. GOLDSWORTHY, in reply to a question from Mr. Risley, stated that the lode in the 48 was south of that in the 120, but the 72 cross-cut would prove the whole of the ground.

Mr. J. Y. WATSON, referring to the accounts, said that if Captain Goldsworthy's estimate, as stated in his report, were confirmed by results the mine would yield a profit of something like 2000. for the quarter.

Mr. Risley had understood that there was nothing to prevent 2½ fathoms of ground being taken away monthly.

Capt. GOLDSWORTHY said it was very easy to talk about such things being done, but they were not so easily accomplished. It was impossible to do more than has been done, and if they drove in the lode they would not do one-half as much, as it was full of what miners knew as "maggot-holes," or vugs.

The CHAIRMAN said they had this fact to deal with, that the returns promised had not been realised.

Capt. GOLDSWORTHY said the sampling had been 160 tons, and the last sampling was of the best quality the mine had ever made, the best parcel yielded a produce of 10½, and the other 7½, and the 200 tons he had estimated for the quarter would, he thought, be of equal quality to the last; while the costs, at least, as far as materials were concerned, would be reduced.

The CHAIRMAN said he fully believed that in Wheal Crebor they had a very good mine—all inspectors told them so, and yet the costs had increased. In the 120 they had been told there was sufficient ore to enable them to raise thousands of tons for several years, but how to get it was a matter for the future.

A long discussion ensued as to the desirability of making some alterations in the management, which resulted in a unanimous decision that the question be left in abeyance, it being generally admitted that when Capt. Goldsworthy was appointed manager the mine and machinery were in an ineffective working condition, whereas now everything had been placed in a substantial and satisfactory condition.

Mr. JERU HITCHINS said he had the testimony of Mr. Paul, the Duke of Bedford's agent, that the mine was worked in a satisfactory manner.

Capt. GOLDSWORTHY mentioned that during the last 10 months something like 3500. or 4000. had been expended in connection with the machinery.

The CHAIRMAN said that the miners had signed "a round robin" to the committee, appealing to them not to alter the present system of payment to what was known as the "five-weeks month," and he (the Chairman) considered the men as justice on their side.

The accounts were passed and allowed, and with the report were ordered to be entered on the minutes.

Votes of thanks were passed to the Chairman, committee, and Mr. Jeru Hitchins, which closed the proceedings.

POWELL'S LANTWIT COLLIERIES.

The fourth annual general meeting of shareholders was held at the offices of the company, Poultry, London, on Friday, March 27, Col. J. A. STEWART in the chair.

The SECRETARY read the notice calling the meeting, and the seal of the company was affixed to the register of transfers.

The report and accounts being taken as read, the CHAIRMAN rose and said he congratulated the shareholders on the satisfactory character of the report, and that, notwithstanding the difficulties with which the directors had had to contend, they were able to recommend a dividend at the rate of 10 per cent. per annum, and after writing 10 per cent. off preliminary expenses, carry forward 1173.

He mentioned the trouble the men had given during the past year, and the loss sustained by their frequent strikes and irregular work. As an instance of their unreasonableness, he stated that some years ago when coal was very low, 4s. per ton was fixed as the price to be charged the men for what they had for their own use, and that last year, when it was costing the company from 10s. to 12s. to raise, the managing director proposed to alter this, and give it them for nothing if they would cut it themselves, but they struck rather than agree to the alteration. He alluded to the difficulties met with in opening out the workings of the Ida Pits, and stated that the agents of the Barons Windsor having given the company notice to sink one of these pits to Nos. 2 and 3 seams, which there was reason to believe would prove less expensive to work than No. 1, the directors were most anxious to raise the necessary capital for this purpose, as well as for unwatering the Ystradharwig pits and working No. 1 from thence. With regard to how this could best be done, he suggested that some of the debenture-holders might probably agree to forego the option of exchanging debentures for shares, and the shares thus released, with those now unissued, might be allotted *pro rata* to the present shareholders. He concluded by moving the adoption of the report and accounts.

Mr. MICHELLS seconded the proposition.

Mr. PINCKOCK said before the motion was put to the meeting he should like to make a few remarks. He thought the tone of the report rather gloomy, and would ask the Chairman and directors, in whom he had every confidence, how it was the output had not been more increased, and if they proposed taking steps to have the shares quoted on the Stock Exchange, because, although he was himself quite content with 10 per cent., he felt that the statements in the prospectus had not been quite borne out by the result, and there being no market for the shares was a disadvantage to those who might from any cause be compelled to sell. He requested further explanation as to how the required capital was to be raised.

Mr. JULIAN GOLDSMID, M.P., said he agreed with the last speaker on several points, but he thought the directors could scarcely be blamed because all the expectations held out in the prospectus and accompanying reports had not been fully realised. Such reports were very frequently too much coloured, and he was quite sure the directors, who had a very large stake in the company, and whom he knew to be all gentlemen of high standing, although he was personally acquainted with only two of them, had done the best under the circumstances. He had occasion at one time to suggest that they should be more cautious in making long contracts, from which they then suffered, but looking at the present state of the market he presumed the advantage now was on the side of the company, and that they would be quite right to enter into them. He would like to have some information as to the estimated quantity of coal under lease, and whether the machinery at Tynant could not be used after a time at Ystradharwig, or perhaps the directors might buy what they required advantageously in Cornwall, where he understood mining machinery was selling very cheap. He considered it unwise to have two classes of shares, and that it was desirable to call up the amount unpaid on those already issued. He lamented the feeling shown by the men, and with regard to the arrangement about the price to be charged them for coal for their own use, he thought these payments in kind were better avoided, as he had often found when labourers had advantages of this sort granted them they did not take them into account at all.

The CHAIRMAN said a full attendance of shareholders at the general meetings was always gratifying to the directors, and thanked Mr. Pinckock and Mr. Goldsmid for their suggestions, which had been under consideration, and should be acted upon.

Mr. MICHELLS then mentioned the estimate made by him when last at the collieries of the quantity of coal unworked, and that the coal sold to the workmen and used by the engine must be added to the quantity given in the accounts.

Mr. LUKIS, the managing director, gave some further explanations, expressing a hope that those shareholders who took an interest in the company would come down to the colliery and judge for themselves.

The report and accounts were then passed, and a dividend of 10 per cent. declared for the past year, payable on and after April 10, free of income tax.

Mr. PORTER then said he could not agree that the report was at all "gloomy," but considered the directors were entitled to the thanks of the shareholders for their management in difficult times. He noticed that, with the candour which characterised the entire report, they had in the first line of the profit and loss account put down their remuneration at 3000., and he was at a loss to understand how gentlemen of position could afford to devote so much time to the company's affairs for such a sum. He concluded by moving that it be increased to 4000. for the current year, which was seconded by Mr. GOLDSMID, and unanimously agreed to.

The retiring directors and auditors were then re-elected, and Mr. Maclean and the Chairman having returned thanks, the meeting concluded with the usual complimentary vote to the Chairman.

WEST CHIVERTON MINING COMPANY.

A quarterly meeting of adventurers was held at the account-house on Friday last, Mr. EDWARD MICHELL presiding. The accounts, as read from the chair, showed that there was a balance in hand at the last account of 50690.; the labour cost for the three months ending Jan. 31 was 46244.; merchants' bills, 11667.; coal account, 16437.; doctors' fees, 407.; dues, &c., 3147.; income tax, 647.; bank charges, 607.; land tax, 117.; way rate, 407.; making a total expenditure of 79844. On the other hand, there had been 413 tons of lead sold, which realised 5112., and 40 tons of blende, 827. The total receipts were 52599., which showed a loss on the three months' working of 27214., and left the reduced balance in hand of 23474.

The agents' report, after referring to various points in the mine, worth from 100. to 200. per fathom, said:—The winzes referred to in our last report, sinking below the 130, and which were valued respectively at 200., 250., and 300. per fathom, we have not been able to sink since in consequence of the water. Having also so much water in the bottom of the mine, it has seriously interfered with our returns of lead from this part, but our new plunger-lift being now fixed at the new engine-shaft, we are glad to say that our position has greatly improved, and we feel confident that in the coming quarter we shall be able considerably to increase our returns.

The accounts were then read, and Mr. CROGG, the purser, brought before the meeting the motion, of which notice had been given at the last meeting, to authorise him to overdraw at the bank for the use of the mine to the extent of 20000. if necessary. Up to the present he had not required such a power, but he might possibly want it in the future. It was stated at the last meeting that such a resolution ought not to be passed without notice being given of it, and he had accordingly given notice. They were now in a different position to what they had been heretofore.

The CHAIRMAN urged the propriety of such a resolution being upon the books. Three months' credit were given for that ore sold, and during that time there were three or four times the amount of cash for these payments, and it would be a great hardship upon him to have to go to the bank on his own responsibility, and without authority to overdraw. The banks would not advance the money in many cases without such authority. The sum of 20000. was not a large amount for a mine like that. He moved that the purser be authorised to overdraw to the extent named.—Mr. LOAN seconded the proposition.

Mr. VAUGHAN PEACOCK objected to the motion, and said that almost everyone at the last meeting opposed it. If the bankers were disinterested, let them say so. He saw no reason why the bankers should be placed in a better position than the merchants. If they were dissatisfied with the way in which the merchants served them he believed they would not hesitate to go elsewhere, and the bankers should be treated in the same way.

The CHAIRMAN said the fact was the purser wanted to get the 20000. to put the merchants in a better position. The bankers were not dissatisfied, nor was there any intention of putting them in a better position than the merchants.

Mr. CROGG said the object of the overdraw was to enable merchants to be paid, and the bankers will have to give credit.—Mr. PEACOCK: Then you are drifting into a difficulty. Why not make a call at once? It would be a frightful thing to go forth that the bankers would not give the mine credit. If they had a difficulty they should meet it honestly and straightforwardly.—Mr. LOAN: We cannot make a call without notice. This motion would have been carried at the last meeting only no notice had been given of it. That was the only ground of objection urged.—Mr. PEACOCK: Nearly everybody disagreed with it.—Mr. CROGG: I beg your pardon. It was not so: it was simply as Mr. Loan has said, because no notice had been given of it.—Mr. LOAN: You cannot make a call in the face of a credit balance of 23400. To make a call under such circumstances would be absurd.—The CHAIRMAN: You could not recover it.—Mr. PEACOCK: Then the bills should not have been credited.—Mr. LOAN: That is a matter of opinion. It has always been the practice to do so in this mine, and you and I, as shareholders, have had the advantage.—Mr. PEACOCK: I have had no advantage. If the ore bills were not credited till at maturity how should we stand? We are in debt in cash 50000.—Mr. JOHNS (the clerk) said the ore bills not at maturity and ore bills owing represented 10,000., and supposing they did not credit any ore for which bills were not at maturity, the balance against the mine would be 80000.—Mr. PEACOCK: Make a call, and wipe it all off.

The discussion then ended, and the resolution was carried, two voting for and Mr. Peacock against.

Mr. LOAN then moved "That in view of the heavy loss on the last quarter, the purser be instructed to write to the lords' agents asking their serious consideration of the same, and also for a reduction of dues, and the abandonment of their premium of 675. for a renewal of the lease, as agreed to at the special meeting held at Truro on Jan. 16.—Mr. CROGG stated that just after the special meeting at Truro he communicated with Mr. Downing, the agent of the lords, relative to the resolution accepting the terms of the lords. A month passed over before he received a reply, when Mr. Downing stated that in consequence of the election he had overlooked the matter. He wrote to him again stating that a meeting of shareholders would be held on the mine that day, and he should be very glad if he could give him any definite information to lay before the meeting, relative to the reduction of the dues. Mr. Downing replied in two posts from that stating that in consequence of the Mr. Bolitho, jun., representing one portion of the lords, being on the Continent, he was unable to call a meeting of the lords generally to discuss the matter of the dues, and he was not, therefore, in a position to give a definite reply. The matter was, therefore, still in abeyance.—The motion, moved by Mr. LOAN, being seconded, was put to the meeting and carried.

This concluded the business, and the adventurers afterwards dined together.

Mr. LOAN, in proposing the health of the Chairman, Mr. Michell, spoke of the present depressed state of mining, but with all the gloom there was a gleam of

hope. He had been looking forward for the last four or five years for some important discovery in the county, and he had failed to see one until recently. It had been his happy lot to visit a little place which, if he was not mistaken, was destined to become one of the greatest places in Cornwall. He referred to Cargoll, which he believed would be another East Wheel Rose, and would give a fillip to public confidence, which was just now very much wanted. He was glad to see Mr. Michell at the head of that mine.—The CHAIRMAN, in returning thanks, said he was not very sanguine generally speaking, but his hopes were centred in Cargoll, and he should be very glad indeed if it should turn out another East Wheel Rose.

The health of the medical staff was cordially drunk, and Mr. LEVERTON suitably responded. The health of the agents and other toast were also given.

AMBROSE LAKE TIN AND COPPER MINING COMPANY.

The second annual ordinary general meeting of shareholders was held at the company's offices, on Tuesday.

Mr. JOSHUA MOSS in the chair.

Mr. W. EATON (the secretary) having read the notice convening the meeting, the directors' report, agent's report, and balance-sheet were read by Mr. J. TAYLOR, the managing director:—

DIRECTORS' REPORT.

Since the last general meeting a considerable amount of work has been done at the mine. The engine shaft has been sunk about 20 fathoms. The whim-shaft 14 fathoms, over 50 fathoms of levels have been driven in the 10, and two very important cross-cuts are being driven to intersect the Wheal Sisters copper lode. We have just sampled a parcel of copper ore at Looe, and have about 12 tons of mundle, and from 8 to 10 tons of tin whitts at surface. The directors had hoped to see the report of the agent at the last meeting to have been able by this time to find out the pay expenses, but they regret to say that the lodes have not turned out as they had appeared likely to do. They have been disappointed at almost every point, both in sinking and driving; it is, however, hoped that the copper lode when reached will prove remunerative. In the meantime they have succeeded in the shaft, and the driving on the east and west lodes in the 50 ft. level. The difficulties have been very much increased by the great advance in materials and coal, and the high price of labour, so that it is thought advisable until the copper lode is cut to reduce the expenditure in every possible way.

AGENT'S REPORT.

March 25.—In accordance with your request, I beg to hand you the following report on the state, prospects, and progress of the mine since the general meeting on April 29.—The engine-shaft has been sunk 14 fathoms 3 feet, and is now 22 fms. below the deep adit level; through this sinking the lode was large and well defined, and in places produced some very rich stones of tin and copper. At the bottom of the shaft we have opened on the lode about 3 fathoms, and it is fully 4 feet wide, composed of capel, quartz, mundle, copper, and a little tin. It is a very strong and masterly lode, and I am still of opinion that in depth it will prove large courses of ore: the deepest point is only now at the foot of the hill. The 10 has been driven 22 fms. 3 ft. east, and 21 fms. 2 ft. 6 in. west, through this drive the lode has also kept its size, and will average from 3 to 4 ft. wide; at times it has produced some very good bunches of tin, but not sufficient to pay for sinking. At this level, and below 20 fathoms west of the shaft, we have commenced to sink a winze at this point the lode is 6 ft. wide, and producing some rich stones of tin and copper, with an abundance of mundle and blende, it has every appearance of soon coming into a course of ore. Just at this point a cross-cut has been driven 23 fathoms south, but not yet reached the lode. During the past two months all our work in this part of the mine has been suspended, and our operations been confined to the sinking of the whim-shaft, and opening on the new copper lode. This shaft has been sunk 14 fathoms below the deep adit, and a cross-cut commenced to drive at the bottom to intersect the north lode; this cross-cut is now 12 fathoms 3 feet north of the shaft, and I hope in about two months from this time it will reach the lode; the ground is good for drive, and as we are driving on the cross-course we may at any time let down the water and enable us to commence sinking in the ore ground. I would strongly recommend this level to be pushed forward as fast as possible; should the lode prove to be good at this point it will be the salvation of our mine, as we shall at once lay open 14 fathoms of backs, and we know that the ore is gone down in the bottom of the adit. The deep adit cross-cut has been driven 30 fms. 4 ft. 10 in., but has not yet reached the Wheal Sisters lode; we have been for weeks past expecting to meet with it, as the ground is letting out a large quantity of water, and is very much mixed with mundle and copper. We have opened on the new copper lode 16 fathoms, and have driven through a good shoot of ore, which is going down; the lode is 14 in. wide, and it appears that we are only just on the top of the ore, as it has never held up to the back of our level; but throughout the drive we have had a good average lode in the bottom, and a large quantity of water boiling out of it. About 4 fathoms south of this lode we passed through a tin lode about 2 ft. wide, and opened on it 9 ft.; this lode will form a junction with the copper lode in a few fathoms further east, where a good improvement may be looked for. Under the present circumstances I would recommend keeping the level as low as possible, and confine our operations to the driving of the cross-cuts.—PETER TENBY.

The following resolutions were put to the meeting, and carried unanimously:—Moved by the CHAIRMAN, and seconded by Mr. J. MEGGIN:—"That the directors' report and balance-sheet be received and adopted by this meeting."

Moved by Mr. J. TAYLOR, and seconded by Mr. W. EATON:—"That Messrs. G. Houlley and J. Meggin, the retiring directors, be re-elected."

Moved by the CHAIRMAN, and seconded by Mr. MEGGIN:—"That Mr. D. Baxter be re-appointed as auditor of the company's books."

Capt. P. TENBY (the agent) being present expressed his having been very greatly disappointed with the result of the operations, both in the shaft and in the east and west lodes, but still had confidence in the ultimate success of the mine, and urged that the cross-cut be pushed forward to intersect the copper lode cut in the shallow adit.

A vote of thanks to the Chairman brought the meeting to a close.

WHEAL MARY ANN MINING COMPANY.

At a special meeting of adventurers, held at Webb's Hotel, Liskeard, Mr. J. C. ISAAC presiding, the purser, Mr. W. G. NETTLE, informed the meeting that the owner of lands adjoining those of Mr. Charles Trelawny had not assented to the application made by the purser on behalf of the company for permission to prosecute the lode through his land, and having regard to the great depth of the mine, the unproductive character of the lodes in the present state, and the very serious costs which would be incurred in any further prosecution of the works without a reasonable prospect of profit to the company, it was resolved "That the further prosecution of these mines be abandoned, and that all operations be suspended as soon as may be consistent with the existing obligations of the adventurers; and that it is expedient to dispose of the machinery, materials, and ores at surface and underground, and to wind up the affairs of the mine at the earliest practicable period."

A committee was appointed to carry out all necessary arrangements for the final winding up the affairs, to realise all assets, and settle all accounts, to enter into the necessary engagements with the lords of the sets, and to convene any further meetings of the adventurers as they may consider expedient. The agents, Capt. James Stevens and James Skeat reported since the last general meeting that the 250, or bottom level Clyma's shaft, has been driven 6 fms., and for the last 4 fms. of this drive the lode has very much improved, and is now 1½ ft. wide, worth 200. per fathom. There is yet about 25 fms. to drive south at this level to reach the slide, and if the lode continues to maintain its present value a valuable piece of ground can be opened out there. There are three stopes working in the back of this level of an average value of 90. per fathom, and about 9 fms. more in length now available for stopping. Clyma's shaft, which was driven the 250 south at the time of the last meeting, have since then been engaged in rising in the back of this level against a winze sinking under the 240. In the bottom of the 240 north a winze is being sunk for the present by the side of the lode for dispatch, and they expect to communicate with the rise in the back of the 250 in a few days. The lode when last taken down in this winze was worth 100. per fathom. When this winze is holed, a piece of ore ground 30 fms. in length can at once be stoped. In the back of this level there are two stopes working, averaging in value 50. per fathom. In the bottom of the 240 south there are six stopes in the course of working, averaging in value 90. per fathom, and, as stated in the last report, about 10 fms. more in length, which can now be stoped. In the bottom of the 230 south there is one stope working worth 150. per fathom. There are also two pitches being worked in the back of the 240 fm. level at a tribute of 150. per ton. Smith's and Trelawny's shaftmen are stoping the back of the 170 fm. level south of Trelawny shaft; the lode in this stope is yielding saving work.

In answer to the enquiries of some of the shareholders, the agents stated that though a slight improvement had taken place in the 250 fm. level south, yet, in taking a review of the whole of the workings, they could see no prospect of continuing operations without incurring a heavy monthly loss. The improvement referred to is within 25 fms. of the boundary, and all the ore ground in the upper level being worked away, the further drive of this level would not enable them to meet the expenditure, and the loss would be at least 10000. per quarter.

WEST WHEAL SETON MINING COMPANY.

A special meeting of adventurers was held at the mine on Monday to consider what steps should be taken in consequence of the resolution of the shareholders in Wheal Seton, the adjoining sett, to stop their mine. The meeting was rendered necessary from the fact that the stoppage of Wheal Seton, following upon that of North Crofty, will throw back the waters of both these mines upon West Seton, which is quite sufficiently taxed by its own, though its profits individually are good. There was a large attendance, and the purser, Mr. O. MATTHEWS, presided.

Mr. CARTWRIGHT, who represented Mr. Basset, of Tehidy, the chief lord of the sett, stated that he had recently visited London for the purpose of settling before that gentleman sundry matters of importance, among others, the position of West Seton. Mr. Basset carefully considered all the circumstances as laid before him, said that the adventurers in West Seton had his most entire sympathy, and asked if he (Mr. Cartwright) had come prepared with a proposition from them. He replied in the negative, and Mr. Basset said that being the case he could hardly be expected to take the initiative; but when the West Seton shareholders had fully considered the matter, and made any proposition, he would give it his best consideration. They could refer with pride to what Tehidy had done for mines under circumstances such as those in which they were placed, and they knew that Mr. Gustavus Basset would be no exception to the rule. If they drew up a plain matter-of-fact statement they might be sure it would meet at Mr. Basset's hands with the liberal consideration which he was satisfied the exigencies of the case required.

Mr. WILLIAMS enquired how many shares had been relinquished?—The CHAIRMAN replied that 77 had been relinquished since the last meeting—88 in all.

Capt. T. PRYOR asked whether there was any reason to suspect that there would be other relinquishments?—The CHAIRMAN had had no intimation. He thought most of the relinquishments sent in were hardly based upon principle.

Mr. HUTCHINSON enquired what was the position of the mine with regard to the water?—Mr. M. LOAN had taken some trouble to ascertain, North Crofty water could be dammed out without much trouble; but North Crofty water would undoubtedly come to Wheal Seton, and that of both to West Seton. This would

give them another 500 gallons per minute, and would, in fact, double their present quantity. Their present engine was working about two strokes a minute too fast, but an enlargement of the plungers would enable them to reduce the speed, and to do all that was wanted so far as West Seton was concerned, and the little water that would come from North Roskear. To deal with the water of Wheel Seton and North Crofty they would, however, require another engine, which would involve an additional cost of 1500, or 2000, a month. Wheel Seton engine would do it, but not with the present pitwork. The lifts were only 9 in., and would need to be 17 in.

Capt. BATH added that their engine could deal with their own water, but not with that of Wheel Seton and North Crofty. If Wheel Seton worked in conjunction they could keep down all the water in the district. At present West Seton was losing about 2000, a month; but had tin remained at the same price as it was three months ago they would have been able to pay expenses. There were no particular points indicating improvement, but of course they could not tell what a day would turn out. He had not gone into the question of reserves, but thought that the cost might be reduced about 500, a month. If all the water came to the mine they could not say that the loss would be less than 3000, a month at the present prices. He thought, however, they might do very well if they had not got other people's water upon them.

Mr. LOAM suggested that the better way would be to appoint a committee which should consider the whole matter, and report to a subsequent meeting. There were many important and delicate questions involved, which would require the fullest and most careful consideration.

Mr. JOHN THOMAS stated that the resolution of the Wheel Seton adventurers to pull up the pitwork and sell the materials was at present in abeyance. The engine was still in operation, and would remain so, in order that the West Seton adventurers might have a full opportunity of considering their position until April 13. It was necessary, therefore, that the West Seton adventurers should act promptly. If they decided to purchase, Wheel Seton would show them every possible consideration as regarded the arrangement of times of payment and the like.

Mr. LOAM: I presume we may receive that as an intimation from Wheel Seton? Mr. THOMAS: You may take it as a fact and an authority.

Mr. HUTCHINSON: That is very satisfactory.

Capt. PASCOE suggested that in that case it would be well to have Wheel Seton inspected.

The CHAIRMAN was of opinion that a great many parties would be ready to come forward and take the relinquished shares if they were re-issued.

Mr. LOAM moved, and Mr. HUTCHINSON seconded, the appointment of a committee to investigate the whole facts, with power to call such practical aid to their assistance as was desirable—the committee to consist of Messrs. P. P. Smith, R. Hilderley, T. Pryor, M. Loam, Alfred Lanyon, and the purser, Mr. Matthews.

The motion having been carried, Captain BATH explained, in answer to a question, that even if the mines had not communicated, it would be impossible to keep back Wheel Seton water. If ever there was a time when those interested in the mining of the district, with the lords, should come forth and assist, that was the time; for if the water was in that district, it would not stop there.

On the motion of Mr. HUTCHINSON and Mr. W. J. CLYMA, the meeting was adjourned to April 7 to receive the committee's report.

BRADDA (ISLE OF MAN) MINING COMPANY.

The half-yearly meeting was held at Douglas, on Tuesday, Mr. W. F. MOORE, H.K., in the chair.

The usual preliminaries having been disposed of, the reports of the directors and manager were submitted, together with the statement of accounts, showing a credit balance of 2007.0s. 2d. The total stock of ore at the mine is valued at 9217.

Upon the proposition of the CHAIRMAN, seconded by Mr. P. KILLEY, the reception and adoption of the reports and accounts were unanimously agreed to.

The CHAIRMAN said that all mining men had told them that they had a great mine in Bradda if they persevered. No fault could be found with them on that head, but success had not yet attended their efforts. It appeared to him that there were two points that they should take into consideration. The first was whether this would not be a favourable time to sell the mine. He had himself a decided objection to making calls on the shareholders without having their opinion on this point. A call produced 2625s., and they had one yet to make. They had ore to the value of 9000s., and the arrears of calls amounted to about 10000s. Against this they must put about 4000s. the amount of their debts. This was, no doubt, a favourable opportunity to dispose of the mine to advantage, and of course, if they should adopt that course, all or any of the present shareholders could go into the undertaking again. He firmly believed there was a mine there, but he did not think they were at a sufficient depth.

Mr. SPITTALL said that all the directors were very largely interested in the undertaking, but they were most anxious to act in accordance with the wishes of the great body of the shareholders. The mine was looking better, and he was perfectly satisfied either to continue the present working or to dispose of the mine and let the company go into liquidation. He knew that it was the opinion of several of the English shareholders also that the latter course should be adopted, but they had not the same means of knowing the condition of the mine that they themselves had. He agreed with the Chairman in his opinion that they had a great mine at Bradda, but the question was whether they had money to develop it.

Mr. ROSEY thought that the mine would be likely to bring a better price if sold as a going concern than otherwise. Mr. SPITTALL said that if they put it to anyone it must be as a going concern, for otherwise they would only get in for what would be got for the materials on the ground. The mine is in such a position now that any mining agent wishing to take up the concern would send a mining engineer down, and he would be justified in giving a most satisfactory report, and there would not be the slightest difficulty experienced in getting up a company.

Capt. BARRELL stated that since March 25 the lode had opened out, and now contained much more copper (with lead mixed) than it had contained since the driving on the 70 south was commenced. He had been down on Saturday and Friday evening on the 70 south, and he must say that he had not hitherto seen anything in the 70 south so favourable as at present.

Mr. SPITTALL observed that the 70 north had improved also.

Dr. MONTFORD thought that by far the most advisable course to pursue was to sell the mine while its prospects were good; and if it was taken up by a new company those who wished to go into it again were quite at liberty to do so.

Mr. ROSEY reminded them that if another company was formed to take up the mine they would not get their money back. They would only get shares.

Mr. SPITTALL: We would not, under any circumstances, have money enough to carry on the mine, and if we made discovery we should, in order to develop that discovery, have to raise money by issuing preference shares, or in some other way.

Upon the proposition of Mr. KILLEY, seconded by Dr. MONTFORD, it was resolved "That as the capital of the company is drawing to a close, and the mine presents a very favourable appearance, it is desirable to dispose of it as a going concern, and be it resolved that the wishes of the shareholders in England be ascertained in reference thereto."

The proceedings terminated with a cordial vote of thanks to the Chairman, secretary, and manager.

GROGWINION LEAD MINING COMPANY.—At the special meeting last Monday the resolution passed on March 12 for increasing the capital, in order that the unworked portion of the mine may be developed, was unanimously confirmed, and some very encouraging information was afforded as to the present and future prospects of the company. The chairman stated that since the previous meeting another parcel of 40 tons of lead had been sampled, and that this had been easily obtained within the time named, so that there was not any likelihood that there could be any falling off in the returns, but, on the contrary, there would be a steady increase. This is fully borne out by the manager's report since received, wherein he states that the main shaft and two winzes will be down 12 fms. below the shallow adit level by the end of the month, and the well commences driving a new level. And he adds: "We shall then be in a better position for raising ore than we have ever yet been, with every prospect of a gradual and steady increase." This is indeed very satisfactory, as the present returns of only 40 tons per month leave a very good profit, and any increase over this yield must cause a still larger amount of profit for division. The new shares have been very rapidly taken up; in fact, many of them were applied for and paid upon by shareholders before the resolution creating them had been confirmed, and we understand that in almost every instance the applications have been in excess of the *pro rata* allotments. The shares at present prices appear to be a desirable purchase, carrying with them as they do a portion of the new shares at par. The manager's report will be found in another column.

DRAKE WALLS.—At the meeting at Glasgow, on March 16 (Mr. G. Stewart Anderson in the chair), the accounts to Jan. 27 showed a credit balance of 2002.16s. 5d. Capt. William Skewis reported that the mine was now nearly drained, and in working condition. He has undiminished confidence in it, and, notwithstanding the very serious fall of 30s. on the price of tin, he expects to be able to work it at a profit. Capt. E. Dunstan reported that the taker of the slime house in the eastern part of the set had already erected nearly 100 frames, built classifying pits, &c., and was about erecting a patent pulverising machine to treat the rough sands. He would in the course of a fortnight have upwards of 3 tons of ore for sale, and would in future make regular sales.

DUNSELY WHEAL PHENIX.—At the meeting at Glasgow, on Monday (Mr. G. Stewart Anderson in the chair), the accounts to the end of December showed a credit balance of 2029.10s. 5d. The directors expressed regret that tin had not been found at shallow depths. Capt. Skewis has still hopes that sinking the shaft and driving the deep adit will discover a good mine.

SOUTH ROSKEAR.—At the meeting at Glasgow, on March 16 (Mr. Stewart Anderson in the chair), the accounts to Jan. 24 showed a debit balance of 2036.6s. 8d. A call of 10s. per share was made, and the committee were re-elected. Captain William Skewis reported that having seen it remarked that in case North Roskear was stopped the water would flow into South Roskear, he thinks it proper to state that such will not be the case, there being no communication between the mine and the other. South Roskear was unworked for 30 years, and if there had been any outlet the water would not have remained in it. It is plain, then, that if there be no outgoing of water, there can be no incoming. He is satisfied that the stopping of any mine in that district will not affect South Roskear a stroke of water per minute. As to the future, they will keep the 40 heads of stamps in full work, and the quantity of tin ore sold will increase with the quality, which is found to improve in depth; but they would like three or four months' work to enable them to give positive figures. Much will depend on the price of tin, which has greatly fallen of late, but which he expects will soon rally. However, labour is getting more abundant, and the price of coals and materials is falling, and these will go some way to meet the deficiency. In opening the mine he has found the lodes large, and, so far as they have worked, up to his expectation; he believes, with a little patience, they will have a good mine, and realise their wishes. Capt. Brenton and Vincent report that they have got over the bulk of the construction work, and in future the greater part of their cost and labour will be applied to

opening the mine and breaking tinstuff for stamps, and they hope at a very early date to largely increase the returns; and with an improved price for tin, which they expect soon to see, and a reduced price for coals and other materials, to work the property to a successful issue.

SOUTH KIT HILL (Tin).—A special meeting was held at the office of the company, on Monday, (Mr. W. Brown in the chair), and it was resolved:—"That the company may from time to time borrow money to an extent not exceeding 50000, at interest, and grant all necessary promissory notes, mortgages, and debentures, &c., with security over the leases, plant, machinery, and effects of the company." It was also resolved that the directors of the company should be authorised to increase the capital of the company by issuing 5000 new shares at 10s. per share, and that the same be first offered to the shareholders of the company *pro rata* on such terms as the directors think fit. On account of the reduced price of tin and the high price of labour, coal, and materials, the capital of the company has been exhausted before anticipated, and it is very unfortunate that it should be found necessary to increase the capital at the present time when the mining world is in such a depressed state. The shareholders, however, do not seem to be discouraged, as the quantities of tin sold have been steadily increasing from the commencement, and many of them are disposed to increase their capital by taking an additional number of shares.

CARGOLL.—At a special general meeting, held at the mine, on March 24, the prospects of the mine having been fully discussed, with a view to having recourse to steam machinery to enable them to develop the lode which has been discovered, it was considered that they are perfectly justified in erecting steam machinery. The property of purchasing a portable engine having been brought before the meeting, and the engineers having expressed an unfavourable opinion of such engines, it was resolved, "That our engineers, purser, and manager be requested to make the necessary enquiries for a suitable stationary engine and boiler, and should they succeed to their satisfaction, they are hereby authorised to purchase them, and to proceed without delay to make the necessary erections." The engineers stated that the sum of about 7500 would be sufficient to purchase the machinery and to complete the buildings, and they saw no reason why they might not be accomplished in three months from this time. Capt. R. Nancarrow says:—"I am very pleased to see the mine presenting such prospects, and, if properly and energetically developed, I believe you will have a productive and profitable mine."

Lectures at the Royal School of Mines.

ON MOTION AND CONSCIOUSNESS.

Prof. HUXLEY took for the subject of his second lecture "The Phenomena of Motion in Living Bodies." He said—In the last lecture we studied the phenomena attending a voluntary action, and found that they could be resolved into modes of motion and states of consciousness. You must not suppose that a voluntary action, different as it may seem from any other kind of action, is rarely separated from other modes of movement exhibited by living bodies by any sharp line of demarcation. On the contrary, there is a series of gradations in the kinds of vital activity which connect voluntary action by insensible transitions with actions which are purely physical and mechanical, and as this is an all important point, I shall dwell upon it at some length. Suppose, for example, that in the case we took before, instead of someone asking the man to move his arm, a person suddenly fires a gun behind him, close to his head. The result would be to cause him to move not only the muscles of one arm, but of both arms, and perhaps the muscles of his whole body would undergo a sudden contraction, and the man would, as we say, "jump." The vibrations of the air strike upon the drum of the ear, and give rise to muscular contraction, exactly like those we found in the case of a voluntary action; there would be molecular changes in the nerve to the brain, the brain itself, and the nerve leading from the brain to the arm, molecular changes in the muscle, and as the result, the movement of the arm. If we examine the states of consciousness we shall find that some of the terms will be wanting. We shall find *sensation*; the sensation of a loud noise, which would be followed immediately by the muscular contraction; thought and volition would not occur here; they might, and probably would, occur after the action, but what concerns us now is that the action goes on independently of them, and would go on just as well if they did not make their appearance.

In the next case we shall have movements which take place under ordinary circumstances altogether without consciousness, even without sensation. Nevertheless, under certain circumstances consciousness can, so to speak, intervene, and the will be brought to bear upon them to a certain extent. This is the case with the movements of respiration; under ordinary circumstances we know nothing at all about them; they go on regularly, independent of our consciousness; yet we can if we please bring the will to bear upon them to a certain extent. We can "hold our breath"—that is, by volition interfere with the regularity of the otherwise involuntary movements. But the control of the will is only temporary; there is a gradual increasing sensation of pain, that at length the impulse to breathe breaks through the will, and the involuntary rhythmical movements resume their ordinary way. That is a case in which consciousness may come into play for a time, but only for a time, and in which it does not ordinarily intervene at all.

But we will go a step further, as no man in a healthy condition knows nothing from his consciousness of having lungs, neither does he feel conscious of having a heart; yet the latter is an organ of the utmost importance—one, the operation of which could not be suspended for five seconds without the abolition of consciousness. The man by consciousness knows nothing of the heart, nor can he by the strongest effort of the will directly influence its movements; indirectly it can be done, but not directly. And yet there is no organ which is more affected by states of mind; hope, fear, shame, &c., disturb the action of this very sensitive organ. The same is true of the vascular system, or at least of some parts of it; take the phenomenon of blushing, which is entirely an involuntary action, due to the operation of certain muscles which regulate the flow of blood to the vessels; by no effort of the will can you produce blushing. In these cases, then, we see the part played by modes of consciousness becoming less and less, and the part played by modes of motion greater and greater; and from these cases we pass to other kinds of movement on which consciousness exercises no influence whatever, either direct or indirect. They cannot be affected by will, nor by any states of mind whatever; they go on steadily in their own way, just as if they were altogether outside of us. Take the cavities of the nose, and the lining membranes of the air vessels in the lungs, we find their surfaces composed of a number of microscopic particles, called cilia, on the surface of each of which cells is a fine filament called a cilium. These cilia are so small as only to be brought into view in the best microscopes, and they are in the living state moving so rapidly that they cannot be seen until the motion becomes retarded, and then they come into view. This ciliary movement goes on day and night constantly as long as the body lives. If you strike off a piece of this membrane the cilia will go on working just as before, may be for hours or days. There is no question that the movements of these bodies have nothing whatever to do with volition or states of consciousness; we are absolutely devoid of the slightest control over them.

There is another kind which is even more easily seen—the movement of the colourless corpuscles of the blood. When moderately magnified blood is seen to be composed of a clear fluid and a vast number of minute red particles; the red corpuscles floating about in the fluid, these particles being only about the 3000th in. in diameter. Among these, however, here and there will be seen a few bodies slightly larger, and without colour; these are the colourless corpuscles. Seen on a glass slide under a microscope, they are found to be irregular masses, which are usually of irregular shape, and which by careful attention are found to be in a state of slow and gradual movement, thrusting out processes here and retracting them there. These processes are something like feet, and similar processes in the lower animals are called *pseudopodia*, and I shall speak of this motion as pseudopodial movements. If the glass slide be kept up to the temperature of the body the movements occur with far greater rapidity, and the corpuscles may even creep about over the slide. These pseudopodia are very common among the lower kinds of animals, some of which are nothing more than masses of the coloured substance of which the colourless corpuscle of the blood is composed; yet it takes into itself portions of food, and exhibits these phenomena of motion. Lastly, among some of the very lowest forms of animal life there is another curious mode of motion—a rotation of the inner substance of their bodies. This occurs in some of the infusoria, which are very common in ponds, infusoria of bog, &c.; they move about by means of the cilia by which they are covered, and the soft substance of the body which fills the outer case, and

which is quite similar to that of the colourless corpuscle, is subject to a rotatory movement, by which it passes up one side of the interior and down the other. Here, then, we have movements independent of consciousness, they are found in bodies without structure, without organs, and, with the exception of the rotatory movements, they are found in all animals; from the highest to the lowest. These active powers of movement are possessed by a certain gelatinous matter, which is the ultimate constituent of all animal bodies—it is called *protoplasm*. It is a substance containing a great deal of water, and having for its chief constituent a nitrogenous substance—*protein*, which you find in white of egg, &c. It is one of most remarkable discoveries of late years that this protoplasm has been found not only in all forms of animal life, but in all forms of life whatsoever. The arrangement of this matter is different in plants from that it is in animals, for in plants it is separated into a multitude of minute particles, each enclosed within a coat of woody matter, the result being what is called a cell; whereas in animals the cells are devoid of this external coat. And this difference lies at the very bottom of the differences between plants and animals; in the plant the cells are shut up, so to speak, and are thus incapable of making the movements they possess visible on a large scale. We must, therefore, in the case of plants look for the motion on a small scale in the parts of the bodies of plants, and this is exactly what we find; the motion, which is least common in animals, is developed on the grandest scale in plants—the motion of rotation. It is best seen in a couple of common water weeds—*chara* and *nitella*—the cells of which are lined with masses of protoplasm, which under the microscope is seen to be in incessant motion, going up one side of the cell and down the other. The ciliary motion is very common among the lower plants, some of which swim about all their lives by means of cilia—the *volvox* is of this kind. Again, there is a common object which you will meet with in almost any stagnant gutter water—the *proteococcus*, of a red or green colour, which usually multiplies by division, but occasionally some of the cells become detached, develop to cilia, and swim about quite independently, and for a long time was taken for an animal. These two kinds of motion are common among plants, but pseudopodial motion is rare, but in the case of some of the fungi, the protoplasm of the cell occasionally comes out and walks about by means of pseudopodia. These modes of motion, which are wholly independent of volition, and which are in no way represented in our consciousness when they occur in us, are just those kinds which are common to plants and animals. In plants we do not meet with the structure we call muscle; is it then something represented in plants, or the lowest form of animal life? Or is it connected in some way with this protoplasm? The study of the properties of this protoplasm has only been commenced very recently, and we are far from having a perfect knowledge of its properties, but some points we know very clearly, and they have a very great bearing on the question we have just asked. In the first place it is a general rule for all the kinds of this protoplasmic matter that they are affected in a similar manner by certain modifications of external conditions. Take for example the ciliary, the pseudopodial, and the rotatory movements. They are all rendered slower by the action of cold, all tend to stop as you approach the freezing point, and so far as we know at present they entirely stop at that point. It is also a very general rule that these movements are all arrested by such substances as ether and chloroform, but as in the case of cold, if the effect is not continued too long, they are resumed when the abnormal conditions are removed. Again, these movements are favoured and accelerated by a moderate increase of temperature, but this is within certain limits, and according to the kind of protoplasm at some point between 104° Fahr. and 140° Fahr., the movements are completely arrested; the organism passed into a condition in which the power of movement is arrested, and if the heat be continued, and especially if it be increased, then the arrest is final, the thing is dead.

A very remarkable circumstance about these substances is their reaction with electricity. A current of electricity passed through an active colourless blood corpuscle caused it almost immediately to retract all its processes and to become round in form; every particle of the protoplasm tends to get as near as possible to the centre. If it had a long form before it now becomes broad, and this is just what we saw the fibres did. If the shock be not too intense, when the cause is removed the effect passes off, and the substance recovers its former activity. Lastly, there is another very important property of the different forms of protoplasm, that they react in exactly the same manner under the influence of the nervous stimulation. There are few cases in which we can follow this out, but there is one very remarkable one, which at first sight would appear to have nothing at all to do with the matter. I dare say you all know what sort of colour a frog is, a yellowish black-spotted colour. If you notice you will find that frogs vary in colour, sometimes they are light, sometimes they are dark; the fact being that when they are in the light they assume a light colour, when in the shade a dark colour. A very low magnifying power will convince you that the colour of the frog depends upon some very curious little patches of yellowish and blackish colour, which you find scattered all over its body. In the light you will see that all these patches are rounded, and form little dots of intense colour, of small size compared with the interspaces. And as the interspaces reflect far more light than the patches, the body appears light on account of their predominance. In the dark the patches extend into a kind of interlacing network, each spot sending out prolongations, and now the coloured patches are more noticeable than the interspaces, and the body of the animal appears dark owing to the larger amount of light absorbed. Nothing can be more simple than this mechanism, but upon what do these different conditions of the pigment spots depend? upon the direct action of light upon the skin, or is it affected through the medium of the eyes of the animal? This question has been solved in a very ingenious way by a friend of mine, who made a sort of hood for the frog's head. When the frog's head was covered with the hood its colour remained invariable, whether in the light or shade, whereas its unhooded neighbour, as usual, approximated its colour to that of the surrounding objects. When the first frog was unhooded and the cover placed on the second, the colour of the latter remained invariable, light or dark, according to the condition it was in when the hood was put on and the former varied. It has been proved by direct experiment that irritation of the nerves of the skin has the effect of causing these corpuscles to contract, just in the same manner as the colourless blood corpuscles, when a current of electricity is sent through them, are made to shrink up into a ball.

Now we are in a position to ask ourselves what these muscles are which are the agents of voluntary action, and of many kinds of involuntary motion. There are two kinds of these muscles—one known as unstriped muscle, found in the intestines, &c.; the other as striped muscle, which alone are the agents of voluntary motions. The unstriped muscles have a very simple arrangement, consisting of long spindle-shaped cells, arranged longitudinally side by side; in fact, these cells are in structure comparable to the colourless blood corpuscles, magnified and drawn out. When the nerve, going to such muscle, is irritated, the fibres of the muscle shorten and thicken—the cells, that is, tend to become rounded in form. And as the muscle is only a peculiar mass of protoplasm, we are justified in assuming that the movements of the body, effected by unstriped muscular fibres, are due to the contraction of the protoplasm. With regard to the striped muscles, there has been for many years great discussion as to their real nature, and the controversy is not yet ended. But the general conclusion to which most anatomists are tending is that what they have called striped muscular fibre is separated in degree only, and not in kind, from the unstriped fibre; it is essentially a mass of protoplasmic matter, in which the particles are regularly arranged. So that it comes into the same category as the unstriped muscle, and, therefore, we may say that all the movements of the parts of the living body are essentially changes in the form of those protoplasmic elements of which the body itself is built up.

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LIGHT AND HEAT WITHOUT COAL—KALOSIC GAS.

But a short time since the idea of obtaining an unlimited supply of gas of high illuminating power at the price of 6d. per 1000 cubic feet would have been regarded as Utopian, yet now this has actually been accomplished upon a comparatively large scale, more than 500,000 cubic feet of the gas having already been made at that price, and still larger quantities of inflammable gas evolving an enormous heat, indeed, in every respect as effective for heating purposes, whether it be in its application to the ordinary processes of cooking or to the generation of steam, has been produced with equal facility at one-third of that price, or at 2d. per 1000 cubic feet. Nor is this all, for the illuminating gas produced by this process (unlike the various cheap gases which have from time to time been before the public, and which have, in most instances, been obtained by the admixture of hydro-carbon vapours with atmospheric air) give every evidence of being a permanent chemical compound, the great advantage of which is that it will carry to any distance with precisely the same facility as the coal gas now supplied from the public gas-works. These being the facts of the case, it is not surprising that the process, which has now passed the experimental stage, has already attracted a large amount of attention, the experiments having been carefully watched and verified by men of considerable reputation and experience in connection with gas manufacture, and amongst others by Messrs. Joseph Quick and Son, the well-known engineers, of Great George-street, whose professional report, although not yet published, is understood to be highly favourable.

The Kalosic gas (so called from the beautiful nature of the flame which it produces) is essentially a compound of carbonic oxide gas and hydro-carbon vapours, or, with carburetted hydrogen, according as one or the other may be more conveniently obtainable, but the commercial value of the compound results from the process employed in effecting the combination, and which forms the subject of the patent which Mr. Isham Baggs has secured for carrying on the manufacture. It is the heating gas to which reference has already been made that forms the basis of the illuminating gas, and it has been demonstrated that upwards of 220,000 cubic feet of this gas can be produced from a single ton of coke, and that the aggregate cost of material and manufacture does not exceed 2d. per 1000 cubic feet of gas produced. By a simple method of treating this gas with heavy petroleum oils, the inventor obtains the Carbokerosic illuminating gas—a gas of 30-candle power—at a total cost, raw material and manufacture included, of less than 6d. per 1000 cubic feet. This, of course, represents the cost of the gas at the works, and does not include the cost of mains and service pipes, which would be the same as at present. In some carefully conducted experiments at the Camp Gasworks, Aldershot, 1 ton of coke was consumed in the patented apparatus, and 220,000 cubic feet of inflammable gas was produced at the measured rate of 4000 cubic feet per hour, the temperature being about 2000° Fahr., for, as it issued from the retort it heated the 2-inch iron pipe which conveyed it to the condenser, to a bright-red heat for 6 or 8 ft. downwards; and the composition of the gas was 1 lb. by weight of carbonic oxide, and 2 lbs. of nitrogen, nearly. Now, it is well known that to produce carbonic oxide, six parts by weight of carbon are combined with eight parts of oxygen; therefore the 2240 lbs. of coke required in this operation, and combined with 2986 lbs. of oxygen to produce 5226 lbs. of carbonic oxide; but as the oxygen is obtained from atmospheric air, of which it only constitutes about one-fifth part by weight, there are four times its weight of nitrogen to be added to the mixture of effluent gas. Therefore 11,944 lbs. plus 5229 lbs., or a total of 17,173 lbs. of mixed and inflammable gas, at a heat of 2000° Fahr., are the result of the combustion.

From this it would appear that the new invention is likely to prove no less valuable for the production of heating gas than for securing an illuminating gas at a low price, for it is very fairly urged that this immense bulk and weight of red-hot gas may be used for the generation of steam or other useful heating purpose, and thus cooled down, it may be burnt again, and converted into carbonic acid. Here, then, we have 5226 lbs. of carbonic oxide to burn, and this again requires 2986 lbs. of oxygen to combine with it. A cubic foot of oxygen weighs 587 grs., and there are 12 cubic feet of oxygen in 1 lb. In the first operation 16 cubic feet of oxygen were used to 1 lb. of coke, but in ordinary practice, "from a variety of disturbing causes, a supply of about 300 ft. of air per 1 lb. of coal is found beneficial." As the second operation here referred to is a combustion in the open air, and not in a furnace, the inventor adopts this measure of supply allowed in practice; and, as 16 cubic feet of oxygen, or its equivalent of 80 cubic feet of atmospheric air, have been already employed in the first operation, there remains a balance of 150 cubic feet for the second—that is to say, 150 times 2240 lbs., or 336,000 cubic feet, equal to 25,846 lbs. of air, which, added to the weight of the combustible, 17,173 lbs., gives a second total of 43,016 lbs. of carbonic acid and nitrogen. Now, what is the heat of this immense mass of gaseous matter as it applies to useful purposes? It has been used with the hot-blast, and has melted a 3-inch wrought-iron pipe in two with it; it was thought even capable of fusing platinum. A large iron smelting-furnace, aided by the hot-blast, is incapable of either of these results. Burning this gaseous mixture in the ordinary way, it is equal to the hottest part of a smith's forge, or 3280° Fahr., for the gas which is burnt is the same in both cases.

Taking it, however, at only 2000° Fahr., what is then the result? From the conversion of the ton of coke into carbonic oxide under the first operation there resulted 17,170 lbs. of mixed gases at 2000° Fahr., and now under the second operation we have an addition to this of 43,016 lbs. of carbonic acid and nitrogen, also at the temperature of 2000° Fahr., thus making a grand total as the result of the combustion of a single ton of coke burnt under the patent of 60,186 lbs. of mixed gases at 2000° Fahr. This weight of gas is equal to 26,86 tons, and to ascertain its steam-producing power upon water it is necessary to reduce it for specific heat, and then to divide the product by the latent and sensible heat of steam. Now, according to Regnault, and the best recognised authorities, the specific heat of water being taken at 1,000, the specific heat of nitrogen is 0.2430; of carbonic oxide, 0.2450; and of carbonic acid, 0.2163. We shall, therefore, not be far out in taking the number 0.2300 as representing the general specific heat of the whole mixture. Multiplying 26.86 tons by 0.230 gives 6.178 tons, and multiplying this by 2000 for degrees, and dividing by 1130°, the sum of the latent and sensible heat of steam for all pressures gives a final result of 11.8 tons of water at 32°, capable of being converted into steam by 1 ton of coke burnt under the provisions of this patent. Now, these figures have been absolutely proved by practical experiment, and when we consider that there is no smoke or waste in the process, that the combustion is perfect, and under the most complete control from first to last, and that the temperature of 2000° is probably far short of the truth, it is not too much to say that this great result is considerably underrated, and that in fact of the results of present practice, and the evaporation of only 5 or 6 lbs. of water on an average from 1 lb. of coal in general engines of the best construction, this patent will double the value of coal not only in the United Kingdom, but throughout the whole civilised world. The invention appears to possess all the elements of practical success, and it may, therefore, be hoped that it will speedily be very generally adopted.

With reference to the value and extent of the applications of this patent, it is stated that, as far as the heating properties of the gas are concerned, 250 cubic feet of Kalosic gas upon pumice, fire-clay, or corrugated metal in an ordinary stove will produce for twelve hours a large and most cheerful fire, the cost of which would be for the whole period, from the above-named facts, one-halfpenny. This gas will, therefore, it is thought, inevitably supersede coal for all household purposes. The apparatus can be supplied, where necessary, in a portable and self-acting form. Furthermore, it will effect a complete revolution in the raising of steam for purposes of " motive power " by sea or land; or, which is the same thing, it will realise an enormous saving in the quantity of fuel consumed for such purposes. Whether for stationary or locomotive engines, or for sea-going steamers, its results will be equally manifest, and in the latter case the wasteful dead weight of the coal saved by this invention will be superseded by the substitution and carriage of an equivalent of

valuable merchandise, thus doubling at once the commercial effectiveness of the existing steam marine of this and every other country.

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MINING NOTABILIA.

[EXTRACTS FROM OUR MINING CORRESPONDENCE.]

BURRA BURRA.—This mine has just sampled a further portion of blende, for which tenders have been invited from the various smelters of that mineral. The sale will take place next week.

ASHETON.—During the past month 5 fathoms have been driven in the 40, with a produce of 6 tons per fathom, with the forecast as good as ever it has been. This driftage has laid open or exposed to view some 300 tons of silver-lead of a value of 4000l., at a cost per month of 450l. The water is drained for 100 fms. in length in bottom of the 30. A series of winzes will now be sunk. No. 1 is started in a lode worth 2½ tons to the fathom; the others will follow in a valuable lode immediately.

WHEEL GRENVILLE.—The lode in the north shaft has improved, and is now producing good tin. This shaft is being sunk to reach the junction of Wheel Grenville and South Condurrow lodes, a feature which the agents of the former mine, in their report to the general meeting of the 26th ult., considered of greater importance than the junction of the lodes in the western shaft, and which point it is expected will be reached in about four months. The ground in the rise above the 150, to effect a communication with the 140, has much improved for progress, the present price for rising being 16l. per fathom, against 23l. at the former setting.

NEW ROSARIO (Mexico).—In a former number of the Journal we described the large new reduction works being erected at Pachuca, on the American plan, by which the ores are reduced much more rapidly, and at far less cost, than under the old Mexican system. The construction of these works has been pushed on as rapidly as possible, 800 men having been employed in building them; and at the date of the last advices (Feb. 27) they would be completed in about a fortnight. The superintendent of the New Rosario Mines writes that Capt. Skewis has inspected them, and found them executed in the highest style, no expense having been spared to render the undertaking a complete success, and the next English mail will no doubt bring advice of their having begun to reduce the stock of the New Rosario Company's ores, which had been accumulating for so many months. The charge for reduction was to be \$20 per month, or 2l. 13s. 4d. per ton; and as the average value of the ore is fully 12l. per ton, there is a large margin for profit. The supplies of ore at surface are considerable, but the quantity laid open in the different levels ready to be stepped away is very large, and the company will now be getting important returns.

LEAD ORES.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Feb. 28—	Calbrook Fells	15½	£12 4 0	Nevill, Druce, and Co.
—	ditto	10 0	10 0	ditto
—	ditto	11½	6 12 0	ditto
Mar. 30—	Lisburne—E. Logyias	20	12 15 0	Panther Lead Company.
—	Glogfach	13	18 6 0	ditto
—	East Darren	50	18 6 0	ditto
—	Cwmystwith	12	12 18 0	ditto
April 2—	South Darren	9	19 10 0	Walker, Parker, and Co.
—	ditto	9	19 10 0	Adam Eytou.

BLACK TIN.

Date.	Mines.	Tons c. q. lb.	Price p. ton.	Amount.	Purchasers.
March 23—	Blue Hills	6 14 2	9	£ 356 13 0	Danbur.
—	Penhalls	8 17 1	10	465 13 1	ditto
—	Kitty (St. Ag.)	6 10 1	13	350 6 8	Tregoning.
31—	Rosewall Hill	11 5 0	12	571 4 2	—

COPPER ORES.

Date.	Mines.	Tons c. q. lb.	Price per ton.	Amount.	Purchasers.
April 2—	South Darren	25 0 0	£ 4 0 0	—	Vivian & Son

COPPER ORES.

Sampled March 11, and sold at Swansea March 31.

Mines.	Tons.	Produce.	Price.	Mines.	Tons.	Produce.	Price.
Cape Ore	68	28½	£ 21 12 0	Berehaven	45	6½	£ 4 3 6
ditto	68	28½	21 11 0	ditto	68	6½	4 1 0
ditto	68	28½	21 11 0	ditto	68	6½	4 1 0
ditto	31	33½	25 3 6	Copper Ore	70	5½	3 11 0
ditto	65	33½	25 3 6	ditto	11	11½	7 12 6
ditto	33	29½	22 8 0	Bampfylde	50	10	6 13 0
ditto	69	35½	26 15 0	Concordia	27	47	26 9 0
ditto	69	35½	27 1 6	ditto	7	21½	15 13 0
ditto	68	34	26 16 0	Ballycunn	32	7½	4 0 0
ditto	49	29½	22 3 0	Coosheen	12	10	6 10 0
ditto	8	33½	26 17 0	Copper Ore	4	17½	12 2 6
ditto	17	29½	22 6 0	Portuguese	2	38½	29 0 0
ditto	13	37½	28 0 0	Stanley cop	29	7½	4 13 0
ditto	21	36½	27 12 6	Copper Ore	1	41½	2 13 0
ditto	27	38½	27 5 0	ditto	2	14½	8 11 0
Berehaven	80	6½	4 3 6				

TOTAL PRODUCE.

Cape Ore	672	£16,257 14 6	Coosheen	12	£ 78 0 0
Berehaven	255	1,048 7 6	Copper Ore	4	45 10 0
Copper Ore	151	60 17 6	Portuguese	2	87 0 0
Bampfylde	50	1,832 10 0	Stanley Copper	3	83 0 0
Concordia	34	1,093 14 0	Copper Ore	3	19 15 0
Ballycunnisk	32	128 0 0			

COMPANIES BY WHOM THE ORES WERE PURCHASED.

Names.	Tons.	Amount.
Copper Mines Company	154	£ 808 0 0
P. Grenfell and Sons	121½	2,844 12 0
Nevill, Druce, and Co.	71	1,831 6 0
Vivian and Sons	35½	4,094 2 6
Williams, Foster, and Co.	115	1,869 3 6
British and Foreign Copper Company	66½	1,479 0 0
Mason and Elkington	116	2,502 14 0
Charles Lambert	120	2,905 4 0
Ravenhead Copper Company	29½	789 2 6
Sweetland, Tuttle, and Co.	34	1,093 14 0
Total	1236	£19,747 8 6

Copper ores for sale on April 14:—Cape Ore 62, 62, 61, 61, 64, 64, 63, 45, 46—Knockmahon 140, 130, 62, 101—Copper Ore 94, 94—Stanley Copper Mines 80—Copper Regulus 14, 21—Concordia Regulus 10. Total, 1274 tons.

TOTALS AND AVERAGES.

21 cwt. Produce.	Price.	Per unit.	Standard.
Whole sale	1236	21½	£15 19 6
			14s. 7d. £ 94 2 0

COPPER ORES.

Sampled March 18, and sold at Tabb's Hotel, Redruth, April 2.

Mines.	Tons.	Price.	Mines.	Tons.	Price.
West Tolgus	70	£ 14 6	South Crofty	51	£ 3 0 0
ditto	69	5 14 6	ditto	47	2 10 6
ditto	68	5 11 6	ditto	7	10 6 0
ditto	65	5 10 0	West Seton	45	4 3 6
ditto	61	5 7 6	ditto	44	6 3 6
ditto	52	5 6 6	ditto	37	3 1 0
ditto	46	5 1 6	ditto	21	4 1 0
ditto	45	3 5 0	East Pool	68	2 9 0
Crenner and Abraham	54	8 18 6	ditto	53	2 7 0
ditto	53	3 18 0	Carn Camborne	65	2 8 6
ditto	52	6 19 0	ditto	40	1 17 6
ditto	51	3 10 6	ditto	28	1 1 0
ditto	45	3 17 0	St. Anlyn United	37	5 12 6
ditto	44	3 16 0	ditto	37	5 12 6
ditto	29	4 0 6	East Seton	60	3 7 6
South Carn Brea	94	3 15 6	Wheel Basset	29	4 0 6
ditto	68	3 1 6	ditto	27	13 17 0
ditto	61	3 2 6	South Dolcoath	33	2 18 0
ditto	45	3 1 6	ditto	17	4 15 6
ditto	15	1 18 0	New Rosewarne	10	1 8 6
Carn Brea.	61	4 5 0	ditto	4	4 13 6
ditto	46	4 4 0	South Rosekar	11	5 10 0
ditto	42	4 1 0	New Dolcoath	19	3 16 0
ditto	38	9 18 6	North Crofty	7	5 7 6
ditto	33	2 6 6	South Tolearne	8	5 13 0
ditto	83	2 6 6	Wheel Camborne	3	5 0 0

CORNISH MINING SHARE MARKET.—During the past week but little change has taken place in the state of the share market. Stocks are still much depressed, and the settling having been on, but little business else has been transacted. There does, however, seem a disposition to pick up good stock at prices a little below present quotations, and during the past two or three weeks a rather heavy business has been done by outside parties for investment. The drop of 2½, which took place in the tin market on Friday last, has not been followed by a corresponding rise, and the prices of some shares are a little lower. The tin market does not look very cheering, and some people, who ought to know, think that we shall not see a much better state of things this year. It is reported that the supplies of tin from Queensland are falling off, but the present prospects of the tin market are not bright, certainly. The following are the closing prices:—Carn Breca shares dealt in at 27 to 29. Cook's Kitchen shares rather scarce, and not much business done at 5 to 6. Dolobad have declined to 3½; and the same business has been seen at 3½. The price of tin is better now, but it would advance rapidly, if the present only the more profitable points are being prosecuted. East Pool shares more enquired for at 5 to 6. East Lovell shares, about the only mine which has remained at present quotations for a good period, are steady at 10 to 11. Rosewall

Hill in better demand at 2s. 6d. to 7s. 6d. South Corn Brea, 17s. 6d. to 22s. 6d., quiet. South Corn Brea shares, 2½ to 2¾; now the strike is ended shares may possibly go a little better. South Corn shares declined to 14, 16; South Corn shares slightly easier at 10½ to 11; St. Ives Consols shares, 4 to 4½. Tincrofts have been moderately dealt in at 21 to 22, and are a good share. West Basset shares, after the meeting on Friday, when a good report was presented, have been in good demand at 6½ to 6¾; West Chiverton, 3 to 3½; West Frances, 7 to 7½; West Seton, 7 to 9; West Tolgus, 21 to 22; Wheel Kitty (St. Agnes), 6 to 7. Wheel Seton engines are still working to give West Seton adventurers a chance of keeping out the water. Wheel Uny, ¼ to ½.—West Briton.

THIRTEEN-MONTHS PAY SYSTEM.—More correspondence has come to us on this subject, and there is nothing to be learned or gained by a controversy. It appears undesirable to uphold a system contrary to commercial usage, being opposed to all mercantile practice, and therefore its continuance should not be urged, especially as it will, no doubt, fail to give that satisfaction to which investors are entitled. There has never been but one principle of pay recognised before the innovation made its appearance—by the day, week, month, quarter, half-year, or year; and to persist in a thirteen pay in the year would, probably, open the door for more irregularities in the accounts. The working of an odd pay in the year of an ambiguous character in its operation, and defects that practical perspicuity which is so essential for establishing and promoting confidence in the making up of accounts at regular calendar monthly periods. Though, no doubt, Cornish mining is suffering from other causes besides this objectionable mode of pay, it is unquestionably injurious in many ways to the permanent well-being of mining interests, as everything should be promoted to strengthen, and not weaken, confidence, which this innovation seems likely to shake.

BEDFORD UNITED.—As will be seen in our columns devoted to the proceedings of general meetings, the accounts of this mine were brought up to Feb. 28, and to provide for another four months' costs and liabilities a call was made sufficient to wipe off the balance. Had this plan been adopted in many of the mines in Cornwall one may venture to say that they would now have better been able to stand against the existing depression, whereas they have not only low prices of tin and disturbances in the labour market to contend with, but they have also in many instances a heavy balance to defray, which it is doubtless probable they are not prepared to meet. The prospects of this little concern are very cheering, and although, perhaps, the shareholders are hardly justified in looking forward to the payment of 50,000l. in dividends again (the mine has, and under the present management, returned over this amount to some of the lucky adventurers), they may yet calculate upon being well remunerated for their patience and perseverance.

THE COAL MINES REGULATION ACT, 1873.

EXAMINATIONS FOR MANAGERS' CERTIFICATES OF COMPETENCY.

DISTRICT UNDER THE CHARGE OF LIONEL BROUGH, Esq., H.M. INSPECTOR OF MINES.

NOTICE IS HEREBY GIVEN, that CANDIDATES intending to present themselves at the approaching EXAMINATION must, on or before the 12th day of May, 1874, notify such intention to the Secretary of the Board of the above-mentioned district, J. T. THOMAS, Esq., Wimal's Hill, near Colford, from whom all information as to particulars can be obtained.

By order of the Board, J. T. THOMAS, Secretary.

Sale of Steel Turnings at the Royal Arsenal, Woolwich.
WAR OFFICE, NEW STREET, SPRING GARDENS,
March 27th, 1874.

NOTICE IS HEREBY GIVEN, that the Secretary of State for War will be prepared to RECEIVE TENDERS for the PURCHASE of such STEEL TURNINGS as may be for disposal during a period of One Year, commencing from 1st April, 1874, at the Royal Arsenal, Woolwich, where Forms of Tender and all information may be obtained, on application to the Controller.

The Tenders are to be delivered at the War Office, 5, New-street, Spring Gardens, S.W., on or before Saturday, 11th April, 1874, addressed to the Director of Contracts, and marked on the outside, "Tender for the Purchase of Steel Turnings, Woolwich."

Sale of Cast-Iron Shot at the Royal Gun Wharf, Portsmouth.
WAR OFFICE, 5, NEW STREET, SPRING GARDENS, S.W.,
April 2nd, 1874.

NOTICE IS HEREBY GIVEN, that the Secretary of State for War is prepared to RECEIVE TENDERS for the PURCHASE of about ONE HUNDRED AND FIFTY-SEVEN TONS OF CAST-IRON SHOT, At the Royal Gun Wharf, Portsmouth, where all information and Forms of Tender may be obtained on application to the Controller.

The Tenders are to be delivered at the War Office, 5, New-street, Spring Gardens, S.W., on or before Tuesday, 14th instant, addressed to the Director of Contracts, and marked on the outside, "Tender for Shot."

THOMAS HOWELL, Director of Contracts.

COAL LANDS FOR SALE IN NEW SOUTH WALES.

THE UNDERSIGNED HAS FOR SALE FOUR PROPERTIES, of ONE THOUSAND ACRES EACH, near SYDNEY, N.S.W., each containing from 20 to 60 feet of good coal in from Two to Five Seams. Price, £10 per acre.

Full particulars, with references, on application to—
C. MITCHELL, Macleay-street, Sydney, N.S.W.

MINING CAPTAIN WANTED IMMEDIATELY FOR NOVA SCOTIA. Likely to be a long engagement. Must be thoroughly competent. Cornishman preferred.

Address, stating terms and reference, to "C. G." care of Robert Hunt, Esq., Keeper of Mining Records, Government School of Mines, Jernyn street, London.

WANTED, by a MINING ENGINEER, who has had the Management of a large Mine for several years, a SITUATION of the SAME CLASS. Is thoroughly up in zinc, lead, copper, and sulphur mining, the erection of machinery, a perfect knowledge of steam-engines, &c.; also has had the charge of a zinc oxide manufactory for nearly six years. No objection to go abroad. The highest references.

Address, "S. W. F.," Post-Office, Nenagh, County Tipperary.

WANTED, a SITUATION to TAKE CHARGE of a SMALL MINE, by a PRACTICAL MINING CAPTAIN, who has had twenty-four years' experience in all branches of the profession, both under and overground. He is thoroughly conversant with dialling, mapping, and assaying ores. Good testimonials and references.

Address, "M. G.," care of Mr. B. Morris, London and County Advertising Offices, 43, Ludgate-hill, London, E.C.

WANTED, a SITUATION as MANAGER, at home or abroad, MINING or OTHERWISE. Eight years' experience; last three years over mines in Devon and Cornwall. Practical engineer, mechanical draughtsman, good correspondent.

Address, "Manager," 24, Lawrence Pountney-lane, E.C.

WANTED, TO HIRE OR PURCHASE, THREE TRUCKS for a Road Steamer, to carry each 6 tons Iron Ore.

Address, to THE BAMFYLDE COPPER COMPANY, 2, Brunswick-street, Liverpool.

WANTED, an OFFER for TEN (£10) SHARES in the PHOENIX SILVER-LEAD MINING COMPANY, all calls (£9) fully paid; also for FORTY NEW DOLOCOATH.

Address, "Beta," Lapey, Stafford.

SITUATION WANTED.

AN EFFICIENT TIN ASSAYER, DRESSER, AND SMELTER seeks RE-ENGAGEMENT ABROAD. References unquestionable.

Apply, with particulars, "Assayer," MINING JOURNAL Office, 26, Fleet-street.

TYLLWYD.—A PRIVATE GENTLEMAN, wishing Tyllwyd Shares, is OPEN to OFFERS. State number and lowest price.

Address, "Box No. 1," Post-Office, Newton Stewart, N.B.

FOR SALE, BLAKE'S STONE BREAKER, 15 in. by 9 in. Never been in use. May be seen at the WEST CUMBERLAND MINE, CALDBECK, CUMBERLAND. Offers received during the continuance of this advertisement by W. B. JEFFREY, Tan-y-Bwlch Mine, Pwllheli, N.W.

OFFERED to a FINANCIAL ENGLISH HOUSE, accustomed to the FORMATION OF COMPANIES, SEVERAL COAL MINES, in full working order.

Apply to Mr. PASQUIER SEROZ, 19, Cité, Geneva, Switzerland.

ON SALE, MASSIVE CRUSHING MILL, with two pairs of 24 in. rolls, in cast metal frames.

Also, 250 yards of 1½ in. diameter IRON WIRE WINDING ROPE.

Address, "X. Y. Z.," MINING JOURNAL Office, 26, Fleet-street, London.

BARITES (SULPHATE OF), CRUDE OR GROUND, FOR SALE.

Apply to FORCE CRAG LEAD AND BARITES MINING COMPANY, 69, Clove, Newcastle-on-Tyne.

With this week's Journal a SUPPLEMENTAL SHEET is given, which contains—Original Correspondence: The Mines and Mining Districts of Utah (B. A. Froiseth); Mining in Utah—Slide or Faults (Illustrated); Anglo-French Railway Communication (W. Austin, C.E.); Coal: Coal Mines Regulation Act; Silketon Fall Colliery Company (Chas. Minshall); Mineral Wealth of Pembrokehire: The Future of Mining (R. Trevellick); Our Railway Interests (R. Trevellick); On Lead and Zinc Mining in and near Wadebridge District (N. Ennor); Legitimate Mining: The Court Grange Silver-Lead Mines Company (Mr. B. Cobb); Remarks on the Original Correspondence in the Supplement to last week's Mining Journal; Chontales Consolidated Mining Company; Wheel Agar—Wheel Grenville; "Circular" Mining—Patent Horizontal Non Condensing Engine (Illustrated); Rock-Drilling Machinery; Foreign Mining and Metallurgy, Foreign Mines, &c.

The Mining Market: Prices of Metals, Ores, &c.

METAL MARKET—LONDON, APRIL 3, 1874.

COPPER.				IRON.			
Best selected...p. ton	£	s. d.	£ s. d.	Bars Welsh, in London	per ton.	£	s. d. £ s. d.
Tough cake and tile.	86	0	0	Do., to arrive	11	0	0-11 10
Sheeting & sheets.	93	0	0	Staff, in London	11	0	0-11 10
Bolts	96	0	0	Bars „ ditto	12	0	0-12 0
Bottoms	97	0	0	Hoops „ ditto	13	0	0-15 0
Old	85	0	0	Bars „ at works	11	0	0-
Burra Burra	84	0	0	Hoops „ ditto	12	0	0-14 0
Wire	per lb.	0	1 0½	Sheets, single, & plates	14	0	0-
Tubes	0	1 0½	0 1 1	Pig No. 1, in Wales	5	0	6 10 0
BRASS.				STEEL.			
	per lb.			Refined metal, ditto <td>7</td> <td>0</td> <td>8 0 0</td>	7	0	8 0 0
Sheets	10d.-11d.			Bars, common	10	0	11 0 0
Wire	10½d.-			Do., mch. Tyneor Tees	11	0	0-11 10 0
Tubes	11½d.-11½d.			Do., railway, in Wales	9	0	9 10 0
Yellow metal sheathing	8d.-8½d.			Do., Swed. in London	18	0	0-
Sheets	8d. -			To arrive	17	0	0-18 0 0
SPELTER.				LEAD.			
	per ton.			Pig No. 1, in Clyde <td>4</td> <td>0</td> <td>4 10 0</td>	4	0	4 10 0
Foreign on the spot.	22	0	0-22 10 0	Do., f.o.b. Tyne or Tees	4	10	0-5 10 0
„ to arrive	22	0	0-	Do., Nos. 3, 4, f.o.b., do.	-	-	-
ZINC.				Railway chairs	5	0	5 5 0
In sheets	30	0	0-31 0 0	spikes	12	10	0-14 0 0
QUICKSILVER (p. bot.)	19	15	0	Indian Charcoal Pigs	-	-	-
TIN.				in London, p. ton	10	0	0-12 0 0
English blocks	£ 90	0	0-91 0 0	STEEL.			
Do., bars (in bris.)	91	0	0-92 0 0		per ton.		
Do., refined	93	0	0-94 0 0	Ditto (hammered)	20	10	0-21 0 0
Banca	91	0	0-94 0 0	Ditto, in faggots	21	10	0-
Straits	87	0	0-87 10 0	English, spring	22	0	0-25 0 0
TIN-PLATES.				LEAD.			
	per box.			English Pig, com. <td>21</td> <td>0</td> <td>0-21 10 0</td>	21	0	0-21 10 0
IC Charcoal, 1st qua.	£ 1	10	0-1 19 0	Ditto, L.B.	31	10	0-
IX Do., 1st quality	2	3	0-2 5 0	Ditto, W.B.	23	0	0-
IX Do., 2d quality	1	15	0-1 17 0	Ditto, sheet	24	0	0-
IX Do., 2d quality	2	1	0-2 3 0	Ditto, red lead	23	0	0-
IC Coke	1	9	0-1 11 0	Ditto, white	30	0	0-32 0 0
IX Ditto	1	15	0-1 17 0	Ditto, patent shot	26	0	0-26 10 0
Canada plates, p. ton.	19	0	0-	Spanish	20	0	0-20 5 0
Ditto, at works	18	10	0-				
* At the works, 1s. to 1s. 6d. per ton less.				† Add 6s. for each X.			
Terne-plates 2s. per box below tin-plates of similar brand.							

REMARKS.—The past week has been very uneventful in the metal trade. Good Friday was a "dies non," and nothing much will now be done until after the Easter holidays.

COPPER.—The charters for the last half of February amount to 1760 tons. This announcement caused the market at the beginning of the week to open with rather a downward tendency. Small parcels of Chili bars changed hands at 70l. for cash, and 75l. 17s. 6d. one month's prompt. Wallaroo, 86l. 10s. cash; and Burra, 85l. The average price of ore at the Swansea Ticketing was 14s. 7½d. per unit for produce of 2½. Cape ore sold at 15s. 0½d. The market for Chili bars was flat, and a small amount of business was transacted at 75l. 15s., 75l. 10s., and 75l. cash. Wallaroo changed hands at 86l. The quotations for English are as follows:—Tough, 85l.; best selected, 86l. 10s.; strong sheets, 94l.; India sheets, 93l.; Yellow Metal, 84l. to 84½d. per lb. A still further decline was observable in the market on Wednesday; g.o.b. changed hands at 74l. 10s. cash, 74l. net, and at the close 74l. 15s. ordinary cash terms. Picked bars, 75l. 10s.; and g.o.b. 75l. 10s. one month, and 76l. three months. Wallaroo, 85l. cash. There is nothing in the present aspect of the market, or in its immediate future prospects to warrant the expectation that any important change for the better is likely to occur for some time to come. Supplies continue to come forward freely, but stocks are rather below than in excess of the average of the last eight or ten years, but while the demand suffices to prevent the accumulation of stocks, it is not sufficiently good to sustain the current quotations, which have had for some time past an almost continuous downward tendency.

IRON.—The market for Scotch pig opened quiet at the beginning of the week, and transactions took place from 79s. 9d. to 79s. 6d., at which price the market closed. On Tuesday the market showed considerable depression, and prices dropped to 77s. 6d., but from this point there was a rally, and at the close an improvement took place to 79s. On Wednesday the previous day's improvement was maintained, and at one time prices advanced to 80s. cash, but the market closed a trifle easier. Thursday's market closed with 80s., sellers.

Week ending March 29, 1873.	Tons	11,167
Week ending March 28, 1874.	Tons	10,601

DECREASE.—There is no change to record in the position of Silesian. The market is quiet. English hard has been sold at 15l.

LEAD.—The market is slightly easier, and quotations are a shade lower. Good soft English pig is quoted 21l. to 21½s.; L.B. 21l. 10s.; and soft Spanish, 20l. 15s.

TIN.—The course of this market has tended downward throughout the week; very little business is doing, and quotations are to a great extent nominal. On Monday transactions in Straits were reported at 90l., 89l., and 87l. 10s. cash. On Tuesday there was little or no business done, quotations remaining unchanged. On Wednesday a few transactions took place at 87l. and 87l. 10s. cash, and 85l. end of April, 87l. 10s. for June, and 87l. for arrival. On Thursday the market remained much the same, and a small business was done in Straits at 87l.

TIN-PLATES are quiet at the moment. Some makers are fairly supplied with orders, but difficulties with the men are imminent, and buyers prefer holding back at the moment.

THE TIN TRADE.

Tin has continued heavy this month, and the retrograde movement of prices has made further progress. On March 25 the 22,428 slabs offered in the Dutch Trading Company's second sale in 1874 were realised as follows:—

19,361 slabs Banca, at 53½ fl. to 57 fl.	Average, 55-35 fl.
3,067 slabs Billiton, at 53½ fl. to 54 fl.	53-60 fl.

The demand for Banca has again been limited, and with the exception of a few days' liveliness on the announcement of the March sale, continued pressure to sell has prevailed all through the month. The price has declined from 42 fl. to 53½ fl., at which latter price the market closes with sellers. The apparent animation in the above-mentioned sale was altogether lost immediately after. During the last few days contracts for delivery ex May sale have changed hands from 53 fl. to 52½ fl. On Dec. 31 the stock of tin in Banca (including last year's production) amounted to about 65,000 pounds, against 63,000, 1872; 85,000, 1871; 74,000, 1870; 58,000, 1869; 95,000, 1868; and 88,000, 1867. Billiton on the spot has been difficult of sale, and gradually gave way from 62 fl. to 51 fl. In contracts to arrive and for delivery business has been very extensive from 60 fl. to 51 fl. On Monday, the 13th prox., a public sale, comprising 9000 pounds Billiton, will take place at Batavia. The following statement shows the position of Banca tin in Holland on March 31, from the official returns published by the Dutch Trading Company, was—

	1874.	1873.	1872.
Import in March	Slabs 1,490	23,744	9,154
Total three months	22,363	55,245	26,130
Deliveries in March	16,694	9,400	6,200
Total three months	34,977	22,701	21,895
Stock second-hand	24,867	11,751	12,200
Unsold stock	97,139	121,758	58,437
Total stock	122,006	133,509	70,637
Afloat	Peculs 4,450	25,626	13,750

Statement of Billiton:
Import in March 1,000 2,900 3,921
Total three months 4,000 10,450 9,121
Deliveries in March 1,400 3,345 2,300
Total three months 6,200 20,290 6,850
Stock 23,820 5,033 5,027
Afloat 10,000 9,325 3,393
Quotations Banca 53½ fl. 57½ fl. 91 fl.
March 31 Billiton 51 91

These combined returns of Banca and Billiton for 1874 compared with those for 1873, exhibit—A decrease of the import for March of 755 tons; a decrease of the import for the three months of 1229 tons; an increase of the deliveries for March of 167 tons; a decrease of the deliveries for the three months of 57 tons; an increase of the stock

second-hand of 997 tons; a decrease of the unsold stock of 769 tons; an increase of the total stock of 225 tons; a decline of the quotation of Banca of 56l. 2s. per ton. ROTTERDAM, March 31.

COPPER.—(Messrs. J. Pitcairn Campbell & Co., Liverpool, March 31).—Business transacted during the fortnight comprises about 1700 tons bars, at 75l. 15s. 6d. per ton, 600 tons ore, at 15s., and 110 tons Corocoro Banca at 16s. 6d. per unit. At Swansea 300 tons regulus sold at 15s. 6d., and by tender this day 1211 tons ore, average produce 21½ per cent., realised 14s. 7½d. per unit. Arrivals here during the fortnight of West Coast S.A. produce—Garonne, from Valparaiso, with 435 tons bars, 115 tons ingots, 30 tons Barilla; Minerio, from Valparaiso, with 660 tons ore and 50 tons bars; Ringdove, from Valparaiso, with 13 tons bars; Deva, from Valparaiso, with 45 tons bars; Cuzco, from Valparaiso, with 270 tons bars, 110 tons ingots, and 110 tons Barilla; Aracania, from Valparaiso, with 640 tons bars. At Swansea—Pacific, from Mejillones with 690 tons ore. Stocks of copper (Chilian and Bolivian) in first and second hands, likely to be available, we estimate at—

Ores.	Regulus.	Bars.	Ingot.	Barilla.
Liverpool	2123	1250	14,244	225
Swansea	4050	4474	2,024	70

Total 6203 5724 16,268 225 70
Representing about 20,400 tons fine copper, against 21,500 tons March 31, 1873; 12,200 tons March 31, 1872; 22,000 tons March 31, 1871.

Messrs. James and Shakspeare.—COPPER: By private contract 700 tons ore to arrive were sold at 15s. per unit, and at the Swansea Ticketing on Tuesday last, good produce ore sold at an average of 14s. 7½d. per unit. Bars have been rather more active than in the preceding week, but the announcement on Saturday, 28th ult., that the charter for the last fortnight in February amounted to 1760 tons pure (of which no details are yet to hand) had an unfavourable effect on the market, which has resulted in a fall of fully 40s. per ton. For Australia the enquiry has been very limited, and values have declined in sympathy with Chili. English has been in tolerably fair demand, but for the most part, at prices which holders would not accept. This English is in but small request, and at secure orders the smelters have been obliged to take lower prices. Foreign descriptions are again weaker, and a "bear" sales of Straits for forward delivery were reported as low as 85s. per cwt., spot parcels, however, being somewhat scarce at present, have remained comparatively steady. A moderate quantity of the Australian changed hands at 87s. 6d.; some hard quality at 83s. per cwt., cishmens.

As everything relating to the tin trade is of interest to the miner just now, we may remark that in the year 1872 (the returns for 1873 have not yet been made up) the Stannary returns showed that 12,300 tons of tin ore were sold by 162 mines in Cornwall and Devon, for 1,065,658l. This ore produced 8241 tons of metallic tin, which realised 1,258,812l., or 193,154l. more than the mines got for their ore. The average price paid to the miner during the year was 87l. 7s. the highest, in the month of April, was 100l. per ton, and there can be no doubt that this high price stimulated production, and that a great number of tin mines were set to work. If we go back ten years, we find in 1863 the average price of tin during that year was 63l. 12s.; 1864, 60l. 17s. 6d.; 1865, 55l. 6s.; 1866, 48l. 10s. 9d.; 1867, 50l. 18s.—these two latter years show the lowest point in regard to price, which declined to about the same level as we have it at present. In 1868 the price advanced, and averaged 55l. 4s.; 1869, 69l. 16s.; 1870, 75l. 3s. 10d.; 1871, 78l. 12s. 6d.; 1872, 87l. 7s. During the years that tin was at the lowest (1866 and 1867), and when it was considered that tin mining was almost at an end in Cornwall, though, as we have shown, it afterwards became more prosperous than ever, there were in 1866 145 mines at work, and they produced 13,785 tons of ore, for 667,999l.; in 1867 only 117 mines, yielding 11,066 tons of ore, and 549,375l. in money.

And here it may be remarked that in 1866 145 mines produced more ore by 1485 tons, and less money by 396,659l., than 162 mines did in 1872. In 1868 only 109 mines were at work, and they produced 11,584 tons of ore. In 1869 there were 117; in 1870, 147; in 1871, 145; and in 1872, as I have said before, they got up to 162. Of these 162 mines at work in 1872 upwards of 30 have already been suspended through the low price of tin, and the returns from these 30 were 3251 tons in the year. Many others, which made large returns in that year are curtailing operations, and others are on the eve of stopping altogether; so that we may safely assume that the production of Cornwall and Devon has been diminished by, at least, 5000 tons a-year. This state of affairs has been brought about, as our readers are aware, by the discovery of tin in Australia, which, it has been said, would swamp and destroy tin mining in Cornwall, and it has already brought down the price ruinously low. Let us see, then, how things stand in that country, and according to the letter of the Brisbane correspondent of the Mining Journal, published last week, and dated Jan. 21, they are not so very prosperous. A "Resident" goes carefully into statistics—gives official documents, which anybody can understand—and comes to the conclusion that the gross exports of tin from Australia for the year 1873 would not exceed 4000 tons of pure tin, or considerably less than the quantity required to make up for the deficiency in Cornwall.

And, in regard to the future, he says, "an extraordinary change has taken place," "tin and copper mining is becoming neglected," and gold again in the ascendant; 200 tin miners have left for the newly-discovered gold fields, and several hundreds would follow during the month of January. About 5000 acres of leased tin land had been declared forfeited by the Government, and as much more abandoned by the lessees as too poor to work. And the result of all this had, when the "Resident" wrote, began to show itself in a very considerable decline in the tin produce. The case, therefore, seems to be this—in 1872, with a production in Cornwall and Devon of 12,300 tons, this mine obtained an average price of 87l. 7s. per ton. This production has fallen to about 89

Notices to Correspondents.

* Much inconvenience having arisen in consequence of several of the Numbers during the past year being out of print, we recommend that the Journal should be filed on receipt; it then forms an accumulating useful work of reference.

SIR.—Could any of your numerous correspondents tell me where ores of tungsten, such as wolfram, scheelite, and stibnite can be had in large quantities; and also the price per ton?—T. H.

PRODUCE AND UNIT.—“C. O. S.” (Allibon).—The “produce” of an ore is the percentage, so that an ore containing 7½ per cent. of copper would be called an ore of 7½ per cent. produce. The “unit” is the unit of percentage, and by it the price is often calculated. It will be best understood from an example. Suppose an ore of 7½ per cent. produce were sold at 12s. per unit, the price per ton of ore would be 4l. 10s., because 12s. × 7½ = 90s. (4l. 10s.); or, finding the price per unit from the price of the ore, we should have 4l. 10s. ÷ 7½ = 12s. The average price per unit for a number of parcels of ore is found by dividing the total amount realised by the total quantity of fine copper contained in all the parcels. Remember, too, that if 7½ per cent. ore be worth 12s. per unit, ore of 6 per cent. would be worth less than 12s. per unit, because in smelting ore of 7½ per cent. we have only to use 13½ tons of ore, but in smelting ore of 6 per cent. produce we must use 16½ tons of ore to get 1 ton of copper metal. The fuel and labour required being the same for all produce ore, or nearly so, it follows that (putting it at 1l. per ton) it will cost 13l. 6s. 8d. to get out the copper from 7½ per cent. ore and 16l. 13s. 4d. from 6 per cent. ore; consequently, if we can pay 60l. per ton for copper, the price to be paid for the ore containing 1 ton of copper must be 60l. minus the cost of extracting the copper, so that theoretically we can give 46l. 13s. 4d. for 13½ tons of ore of 7½ per cent. produce, and only 43l. 6s. 8d. for 16½ tons of ore of 6 per cent. produce. In practice, however, there are many things, such as impurities, which render the smelting more difficult, &c., which have to be considered as well as produce in regulating the price that can be given for the ore.

ORE PURCHASERS.—“T. H. A.” (Cambridge).—Blende contaminated with arsenic and sulphur would not be readily saleable. It is the impurities associated with the blende (principally poor copper running) that makes the ores of the St. Agnes district comparatively worthless, and the cost of separation is too great to be commercially practicable. Magnetic iron ores are now very plentiful in the market; the best way of disposing of them is to apply to a mineral agent.

TALIESIN.—Can any reader inform me what is doing by the company formed for working this mine?—R. R.

EAST SHERBOURNE.—I shall feel obliged if any one of your readers will let me know through the Journal if this company is still in existence or not; and, if in existence, what its present position is?—A. E.

RECOVER.—“R. A. M. Frost” (Utah).—“H. S.” (Utah).—“T. T. A.”—“A. R.”—“A. Subscribers.”—“Nemo.”—“R. B.” (Dublin).—“D. R.” (Colorado).—“J. R.” (Nevada).—“Reader.”—“B. S.” (Maidenhead).—“Shareholder.”—“J. S. P.” (San Francisco).

SHARE DEALING.—We never interfere in the sale or purchase of shares; neither do we recommend any particular mine for investment or speculation, or broker through whom business should be transacted. The addresses of most of the latter appear in our advertising columns.

SCALE FOR ADVERTISEMENTS.—Our charge for general advertisements is—for six lines and under, 4s.; per line afterwards, 8d. Average, 12 words per line.

AMERICAN SUBSCRIBERS.—In reply to several enquiries, it may be stated that subscribers in the United States can be supplied with the *Mining Journal*, post free, at the price of \$5 50c. gold per annum, payable in advance, by remitting to Mr. D. Van Nostrand, publisher, and importer of scientific books, &c., Murray-street, New York; or, direct to our Office, 26, Fleet-street, E.C.

THE MINING JOURNAL,

Railway and Commercial Gazette.

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THE ROYAL COMMISSION ON THE LABOUR LAWS.

The Royal Commission for enquiring into the laws regulating the relations between masters and workmen has commenced its sittings, and although we do not believe there will be any substantial grievance brought to light requiring immediate legislation, still we would have desired to have seen the two sides interested well represented; but this has not been the case. Mr. McDONALD will ably, and we have no doubt from his standpoint fairly represent the Unionist workmen, and will find a willing condutor in the person of Mr. T. HUGHES, and to some extent also in Mr. ROEBUCK, who is only opposed to trade combinations when they interfere with individual liberty, or where, as was the case in Sheffield, they led to the destruction of property and contemplated personal injury, and even assassination. But, strange to say, there is not one person to act on behalf of the capitalists, the great employers of labour, without whose energy, experience, and commercial skill Unionism would be comparatively powerless. We certainly think it would have been to the advantage of the Commission had one of its members been an employer of labour, who could act for the body to which he belongs, and bring out in evidence important points which can only be accurately known to those who have large dealings with working men. The interests of the latter having been secured by at least two of the Commissioners, we certainly think that such a man as Mr. GEORGE ELLIOT, who employs some thousands of men in mining and other pursuits, might in all fairness have been included in the Commission. The result of such a one-sided selection, however, must have the effect of detracting very much from the value of the report.

But, taking the Commission as it is, we do not believe that in the end there will be any material alteration in the existing laws, despite the assertion of Mr. POTTER and others of the Trades' Parliamentary Committee that no enquiry was necessary, but that what they so frequently term the obnoxious laws relating to labour should be at once abolished. Mr. POTTER, indeed, fell foul of Mr. McDONALD for allowing himself to be placed on the Commission, but we are glad to find that the member for Stafford was so far superior to the editor of the *Beehive* and the little clique that take their inspirations from that paper, as to declare that he was independent of them, and dared to act on his own responsibility. This was what might be expected from Mr. McDONALD, for whatever his failings may be, we must give him credit for honesty of purpose, thorough independence, and a desire to benefit those of whom he has long been the able and unswerving champion.

Having said so much with regard to the composition of the Commission, we will briefly glance at the principal Acts of Parliament that are likely to be reviewed. The most prominent of those will be that known as the Criminal Law Amendment Act, 31 and 35 Vic., by which the 6th George IV., c. 129, and the 22 Vic., c. 34, are repealed. Of the seven clauses of which the Act named consists only the first relates to offences which are punishable, the others merely defining the mode of procedure, appeals, jurisdiction, &c. The Act applies to masters as well as men, for it is laid down that “every person” who does certain things with a view to coerce others, with regard to “a master to dismiss or cease to employ any workman, or being a workman to quit any employment,” &c., shall be guilty of an offence. In all the sub-sections we find that no allusion is made to the working man, but to “every person.” Molestation is also defined as persistently following a person about from place to place. Or a person shall be deemed to molest or obstruct another if he

“hide any tools, clothes, or other property belonging to or used by such person, or deprive him or hinder him of the use thereof; or if he watch or beset the house or other place where such person resides or works, or carries on business, or happens to be, or the approach to such house or place; or if with two or more other persons he follow such person in a disorderly manner in or through any street.”

Now, for our own part, we cannot see anything in the above extract that can in any way be obnoxious to an honest and independent workman; but to him who would tyrannise over his fellows and compel them to adopt his views it is a very different thing. The member of an association who would coerce a non-Unionist so as to force him to belong to a Union would, of course, be punishable under the Act, and it is evident that it is in the interests of such persons that Mr. POTTER and his clique are so desirous of having the Act repealed. But the workman who has no wish to be a member of a Union requires protection from molestation, and this he can only obtain by some such enactment as the Criminal Law Amendment Act. That such is necessary is fully shown by the report of the Commission presided over by Sir W. ELLIOT, in which it is stated that the outrages in connection with the strike of brickmakers in Manchester, “which rendered life and property insecure,” were, in our opinion, all of them instigated and sanctioned by the several Unions in the districts in which they were respectively committed. With regard to the outrages in

Sheffield, the same report says:—“Crime and outrage have been the habitual methods of enforcing the trade laws of the Union. The abstraction of the workman's tools, so as to prevent him from working for his livelihood until he has obeyed the arbitrary orders of the Union, they look upon (according to one of their advocates and apologists) as little, if at all, worse than distraining for rent by a landlord.” According to another of the advocates of Unions, “they regard workmen who stand aloof from the Union with a feeling akin to that which defenders of their country have towards a citizen who deserts to the invaders for the sake of better pay.” With such views on the part of the leaders of vast combinations of men the Criminal Law Amendment Act must be very annoying, whilst it is the only safeguard of the truly independent man who does not believe in Unions; hence the great efforts made by the Trades Parliamentary Committee in the session of 1873 to have it repealed.

The Masters and Servants Act is no doubt capable of some improvement, the 14th section being that to which the Unionists are most opposed. That section, however, does not apply to breaches of contract, but to “injury inflicted on persons or property, or misconduct, misdemeanour, or ill-treatment of an aggravated character.” Now, with regard to some of those charges, if proved, few will deny that the magistrates should have power to imprison. But it has been asserted that power to imprison for breach of contract should not be allowed. In putting forward their views the Union leaders have ignored the fact that the magistrates by the 9th section have power to order the fulfilment of a contract, and that the defaulting party, master or servant, not obeying such order may be imprisoned for any period not exceeding three months. The imprisonment, it will be seen, is not for the breach of contract, but for refusing to obey the order of the Court.

The law of conspiracy is another of those enactments to which the Unionists are strongly opposed. To say the least of it, we must admit that it is by no means so clear as could be wished, and might well be so altered as to be more easily interpreted. But at the same time that individual liberty should be well protected against the power of numbers, or even of two or three persons, such a law we hold to be necessary, and the doing away with it would be a great and serious mistake, and opposed to the interests of the independent working man.

We have thus far given an outline of what is likely to be taken in hand by the Royal Commission, and though great efforts will be made by some of the members of it to do away with the Criminal Law Amendment Act and others, still we have every confidence that any alteration in the laws relating to labour that may be recommended will have for their object the maintaining and determining the just rights and privileges of all classes, and the making of some Acts of Parliament more clear and intelligible.

THE COAL QUESTION.

The all-absorbing question just now is undoubtedly that relating to the wages of our coal miners, who for the last two years have been receiving almost double the amount of remuneration they formerly did. Our own views on the subject, published several months ago, in anticipation of the present state of affairs, have been verified to the letter. We then stated that a great collapse in the coal trade was inevitable, and that the miners should prepare to accept a very considerable reduction of wages. Reports from all the mining districts in the kingdom are of an almost stereotyped character. From Scotland to Northumberland and Durham, in Lancashire and Staffordshire, from one end of the great Midland coal field to the other, and passing onwards through Leicestershire to the extreme western mining districts, we hear of nothing but miners' wages and miners' strikes. In Scotland there is every appearance of a desperate and protracted struggle, unless wise and dispassionate counsels prevail to prevent a state of things that will be fraught with misery to thousands of families. The colliery owners propose a reduction in miners' wages to the extent of 2s. per day, and Mr. McDONALD, M.P., counsels them to submit to a reduction of half that amount, although he admits that coal which last year realised as much as 23s. per ton now sells for only 14s. He says that in recommending so small a fall in wages he does so because the workmen did not receive an advance equal to what the employers made when coal rose to a fabulous price. But he does not allude to the fact that for many months past the masters have been paying the same rate of wages that they did when they were receiving at least 50 per cent. more for their coal. We think, however, that the proposal made by Mr. McDONALD that the men should work double-shifts is one well worthy of consideration. We look upon it as a concession, for, with every respect for the member for Staffordshire, we know that he is opposed to the system, and has offered it for the purpose of averting a serious calamity, a fact that is in the highest degree creditable to his humanity as well as his sagacity. With reference to the double-shift system, Mr. G. ELLIOT, in his evidence before the Select Committee on Coal, said that by its adoption a larger price could be paid to the getter than where only one shift was worked. From the great experience of Mr. ELLIOT, not only as a mining engineer, but as one of the largest employers of miners in the kingdom, his opinion may be of sufficient weight to be considered by the Scotch coalmasters. It appears, however, that the leaders of the miners in Scotland are about to fall back on the old plan of striking against three or four firms, and allowing the men at the others to accept the reduced terms, so as to support those who are out. But we are very much mistaken, indeed, if their policy can be carried out, for we cannot believe that wealthy colliery owners like Messrs. CUNINGHAME and MERRY (Limited), the Messrs. BAIRD, and others, will agree to supply the funds by which their entire body is to be defeated in detail. We are more inclined to believe that they will close their works, and so stop the supplies. How the many thousands in such a by no means improbable eventuality are to be maintained will tax the powers of the Unionist leaders more than they have ever before been taxed.

If wages of colliers, however, are to be regulated by the market price of coal, then the necessity for a considerable reduction of wages at the present time is irresistible. One of the great arguments of Mr. McDONALD, Mr. NORMANSELL, and others in upholding the modesty of the miners in relation to their demands for increased wages was that any advance asked for followed, but did not precede, a rise in the price of coal. Admitting such to be the case, surely it follows that any marked decline in the value of coal by the same rule ought to be followed by a reduction of wages. But this argument is not admitted by the miners, who would prefer working short time, and would, consequently, tax the public to any extent so as to maintain their present position. But as the men, when it suited their purpose, asked for and obtained advances of wages on the ground of the rise in the price of coal, it may be worth while to see what their present position is and ought to be. If we take the London coal trade as our guide—and we cannot have a better—we find that the best qualities of Wallends were delivered during the whole of 1870 at from 25s. to 27s. per ton, prices which we were then told left little or no profit to the colliery proprietor. In 1871 prices improved, and prices in the December of that year were as high as 29s. per ton, and continued at that rate until the month of June, 1872, when there was an advance of about 1s. per ton. Wages at this time had been gradually creeping up, for we find that, amongst others, the South Yorkshire miners received an advance of 15 per cent. on the prices paid the previous October. The same body, in the August following, coal having rapidly gone up, again had their wages increased by 15 per cent., making 30 per cent. for the year. The same advance was general throughout all our mining districts. On the occasion of the last-named advance of 15 per cent. the price of the best coal, delivered in the metropolis, was 30s. per ton, being 5s. per ton more than it now is. Since then, however, the men have had another advance of from 15 to 20 per cent. Taking the entire increase of wages since the early part of 1872 at from 47 to 50 per cent. (a fair estimate), it is evident that colliery proprietors, as a rule, are now paying, according to what they are selling their coal for, at least from 20 to 25 per cent. more than they ought to do. As an illustration of this position, we find that in South Yorkshire, in July, 1872, when coal in the London market was 1s. per ton more

than it now is, the miners were receiving 30 per cent. less wages than at present.

Surely these facts are sufficient of themselves to show the miner endowed with ordinary intelligence that a reduction of wages in all our mining district is a necessity that cannot be much longer delayed. Having taken full advantage of an exceptional state of trade, which is not likely to arise again—at least for some generations to come—they ought to have no hesitation in submitting to the great change which has taken place. Still, with the full knowledge of a fall in the price of coal in many instances equal to from 70 to 80 per cent., the workmen show a strong disposition to oppose any reduction whatever in wages. This appears not only unreasonable but most unfair. Right cannot be entirely on one side, and the colliers have only to consider the concessions made to them when the price of coal was advancing to act with justice towards their employers now that it has fallen to within a trifle of what it was a little short of a couple of years ago, and when their wages were at the least 30 per cent. less than they now are. Besides it should not be forgotten that the working of a colliery is now far more costly than it ever has been, owing, not only to the carrying out of the recent Act of Parliament, but to the great increase in the prices of rails and every other article required in mining operations, both on the surface and underground, so that, comparatively speaking, an increase in the price of coal does not mean increased profits.

COAL CUTTING BY MACHINERY.

It requires but a very limited knowledge of mechanics and mechanism to enable one to demonstrate that in the process of coal cutting the quantity of power necessary to perform a given amount of work with a pick is vastly less than with the best form of rotary cutter that could even be hoped for; it is, therefore, somewhat surprising that when, in a paper read before the Cleveland Institution of Engineers, on Jan. 15, an author declared that in working a pick-machine “one-half of the power was consumed in drawing the pick back to strike another blow,” and that “in any rotary machine . . . all this loss of power is avoided,” the fallacy of the statement was not at once exposed and exploded by the members present, some of whom it may fairly be presumed are professional engineers. The statements that the principle of a machine is theoretically unsound, and that it has worked satisfactorily for ten years, are perhaps scarcely consistent as applied to coal-cutting machines, seeing that no standard of theoretical perfection for coal-cutting machines has yet been fixed by the leading authorities in engineering matters.

In replying to the attack made upon him, as he did at the meeting of the Institution on March 12, Mr. FIRTH has furnished some interesting practical facts. His experience of cutting coal by FIRTH's machinery is that three men work each machine, and cut 60 tons of coal per day, which is equal to the work of 12 average men at hand-boring; that 15 additional men will do all the other labour upon the 60 tons up to the coal being got into the corves ready to be sent out of the pit, and that about 30 more men are required in the other labour connected with it, making a total of 48 persons for every 60 tons per day, and in the same proportion whatever quantity may be raised. This would be equal to the ordinary product of 60 men when the hewing is done by hand, and, therefore, there is an increased power of production of 20 per cent. wherever machinery can be used, without adding to the present number of persons employed in and about the said collieries. The machines under notice are employed only in doing the work of “hewing” in undercutting a narrow groove into the body of the coal, sufficiently deep so as to dispense with the hand-hewing, which work is by far the hardest and most trying labour of a colliery, and to mitigate this severity is the prime object of the substitution of machinery.

It appears from the official statistics that in the year 1872 there were 418,000 persons employed in and about the collieries, in producing 124,000,000 of tons of coal, which gives an average of 296 tons for the year to every person so employed. Of these Mr. FIRTH estimates that about 135,000, if constantly occupied at it, would be able to hew the whole. That out of this number about 15,000 are engaged in doing the straight work, or other such work with the hand-pick, as can probably never be executed by machinery. Then there are places where, from exceptional causes, machinery is inapplicable. This would employ permanently about 20,000 of the 135,000, so that about 100,000 persons out of the whole 418,000 is, apparently, the extreme limit of disturbance by any existing coal-cutting machinery, and applying the Firth machine to that aspect of the question—and if it were universally adopted—then about 100,000 of the hardest worked men would be gradually transferred to the easier occupation of timbering and other employment, where their superior knowledge of pit work would at all times secure to them the highest wages payable. Thus the saving of labour effected by getting coal with the most approved machinery, as compared with getting it by hand-labour, is less than 20 per cent., and it is probable, because Mr. FIRTH does not claim for coal cutting by machinery an economy which can never be realised in practice, that his competitors are too often inclined to underrate the merits of his machine as compared with their own.

From figures which appear indisputable it seems that cutting 60 tons of coal per day in a given seam of coal, the money saving, as compared with hand-labour, is 3d. per ton when the Baird, or rotary, coal-cutter system is used, and 1s. 10½d. when the Firth, or pick, system is used. As to the movement of the machine, the advantage of discretionary over automatic movement is clearly pointed out; it is remarked that the size and weight of the Firth machine renders it easy of locomotion, and is moved from bank to bank without the least difficulty. It is traversed on light tram rails by a pinion wheel, but under certain circumstances is drawn by a chain. It is, however, preferred, as a rule, to move the machine by the wheel, because in some seams, where pyrites or other hard substances are found, the pick has to strike 10 or 15 strokes at the same spot before it reaches the proper depth of cut; and if the machine is advanced by an automatic arrangement, it travels forward and leaves the work imperfectly and irregularly executed. In some favourable collieries the chain may, however, be advantageously used. When the services of the machinery are required at another place, two of the attendants carry it away, and the third man puts the pick, flexible pipe, and other ordinary tools into an empty corve, and the whole of the appliances are removed with no more difficulty than a full corve of coal. The connecting and disconnecting of the flexible pipe to or from the fixed pipes is the simplest matter imaginable, and needs no explanation here. The mode of action is the reciprocation of the pick, which is keyed on to the upright spindle, and the piston connecting rod is in like manner attached to the spindle by a crank-arm, so that with every stroke of the piston the pick is made to strike on the face of the coal in the line selected for “holing.”

The introduction of coal-cutting machinery has always been looked to by Mr. FIRTH as a matter of but slow progress, and he considers that the increasing demand for coal will absorb the increased production as rapidly as the machinery can be got to work. But he has looked forward with great confidence to being able to dispense with the hard and cruel labour of hand coal-hewing; he has shown that it not only can be done in a better manner, and without the coal-owner being called upon to make any sacrifice in money—but indeed with considerable profit—and he considers it a great scandal that, after the necessity for it has ceased to exist, the physical and social condition of 100,000 of our fellow-men should still be required to labour in so barbarous an occupation in order to maintain either the national or any other prosperity. Comparing the relative merits of the two machines, and as the principle of comparison was commenced on behalf of Mr. BAIRD, he cannot object to its being continued. It need only be stated that the rotary cutter machine requires five times as much repairing, and does but two-thirds the work of a Firth machine, even whilst it is at work. FIRTH's machine makes 60 double strokes per minute, and consumes 33-77 cubic feet of air per minute to cut 7½ running yards of coal 36 in. deep, being 270 cubic feet of air per yard of coal cut, and BAIRD's machine makes 108 double strokes per minute, and consumes 80-73 cubic feet of air per minute to cut 5½ running yards of coal 32½ in. deep, being 901 cubic feet of air per yard of coal cut. As the data relating to the Baird machine was furnished by the Hetton Company to the

author of the paper as Mr. BAIRD's representative, the accuracy of the figures cannot be questioned, and probably both Mr. FIRTH and coauthors generally may be congratulated that the paper, although not absolutely perfect, has been the means of eliciting facts calculated to facilitate a comparison of the relative merits of the two systems of coal-cutting which would otherwise have been impracticable.

The Lehigh Coal and Navigation Company has just reported progress for 1873. The company is a railroad proprietor, a canal proprietor, and a colliery proprietor. From its railroads it derived last year a revenue of \$1,174,081; from its canals, a revenue of \$326,753; and from its collieries, a net profit of \$287,493. The latter total may be subdivided as follows:—Net profit on 561,240 tons of Lehigh coal, \$200,547; net profit on 157,680 tons Wyoming coal, \$67,057; and net profit on 190,938 tons Plymouth coal, \$19,890. A sum of \$46,787 was also derived last year from coal mined by leases; and, including sundry accessory items of revenue, the company realised last year an aggregate revenue of \$1,946,503. This may appear at first sight a very considerable income, and so no doubt it was; but the company was hampered last year with very heavy interest charges, the balance of the interest account for 1873 having been no less than \$1,405,180. After providing for other outgoings, the revenue account was left with a deficit of \$35,381 for the year. The coal tonnage on the Lehigh and Susquehanna Railroad, and on the Lehigh Canal, last year compared as follows with the corresponding movement in 1872:—1873, 3,176,280 tons; 1872, 2,792,705 tons; increase in 1873, 383,575 tons. Of the coal carried last year 1,812,021 tons came from the Wyoming region, as compared with 1,497,304 tons in 1872. The quantity received from the Lehigh Coal and Navigation Company's Lehigh Mines last year was 523,071 tons, the corresponding quantity for 1872 having been 549,115 tons. The production of the company's mines last year was as follows:—Summit Mines, 451,540 tons; Room Run Mines, 74,074 tons; Newport Mines, 157,195 tons; Plymouth Mines, 190,938 tons; and Greenwood Mines, 35,617 tons; making an aggregate for the year of 909,373 tons. The corresponding production for 1872 was 799,654 tons, showing an increase last year of 109,719 tons. The production effected by the company from mines under lease did not exceed 171,780 tons in 1873, as compared with 215,236 tons in 1872. Upon the whole, the position of the company would appear to have sensibly improved during the past year, the gain in revenue having been \$518,074, while the increase in the current charges did not exceed \$277,529.

The revenue derived from the company's railroads presented a gratifying increase in 1873; the lessee expended last year, with the concurrence of the company, a considerable sum for double-tracking the road, and otherwise increasing its capacity for business. The production of the company's Summit Mine last year presented a small decrease as compared with 1872. There was an unexpected delay in completing improvements, and some of the old mines gave out in the spring before new ones were ready to supply their places. This was not remedied until October, when the demand fell off, in consequence of the prostration of the iron trade and other industries using hard coal; so that during October and November the company were unable to work its Lehigh Mines more than half-time. The company operated last year but one of its Newport breakers, with a production of 157,680 tons, and the satisfactory profit of \$67,057, as already indicated. The leased mines at Plymouth operated by the company were in much better condition last year than in 1872, and yielded a profit of \$19,890 over the rent paid to the landowners. The demand for softer anthracites continued until the close of navigation, and the October and November production of the Newport and Plymouth mines was large. The shipments from these and other mines in the Wyoming region also made the receipts of coal very heavy in the last quarter of the year. They would have been still larger if the demand for Lehigh coal had not suddenly fallen off. During the greater part of last year the company was compelled to pay very high rates on its floating debt. The competition among borrowers, principally railroad companies, for money offered for temporary loan forced rates up very high during the winter and spring; and while rates were comparatively low in the summer, the supply did not at any time during the year exceed the wants of borrowers. When the panic checked negotiations, in the middle of September, the floating debt of the undertaking was at its maximum, and great difficulty was experienced in meeting maturing obligations. The managers determined to seek relief by the sale of the company's coal lands in the Wyoming region, which, not being largely developed, were producing but a small revenue. After long negotiations, a sale was finally effected to the Honey Brook Coal Company (controlled by the Central Railroad Company of New Jersey), at the rate of \$700 per acre for the coal area, the improvements and personal property to be taken at a valuation. This sale was followed so soon by the lease of the company's Lehigh coal lands, and a contract for the maintenance and operation of the company's canals, that it was substantially one negotiation.

SOUTH CLEVELAND IRONWORKS.—In our report of the annual meeting, held at the City Terminus Hotel, London, on March 10, it was stated that "the Chairman said Mr. Hill had been dismissed." This was incorrect, and an error of the reporter, as we have from the Chairman a distinct denial of his having said any such thing. Of course, our reporter had no intention of injuring Mr. Hill, and we very readily express our regret the mistake should have been made.

GAS FROM KIMMERIDGE COAL.—The rich oil-bearing shale existing in Dorsetshire, and known as kimmeridge coal or clay, is at present receiving attention from the Rev. Henry Moule, of earth-closet celebrity, as a gas-producing material. A few weeks since the same gentleman's suggestion to substitute kimmeridge clay and chalk for coal in the production of heat was noticed in the *Mining Journal*, and it was pointed out that the all-important element of comparison—the number of heat-units produced—was not even referred to. His present proposition appears to be to employ kimmeridge shale as a gas-producing material, and chalk as a purifier, yet the suggestion is prominently put forward as a new artificial light. Mineral burning-oil manufacturers and gas engineers will have no difficulty in estimating to what extent so high sounding a title is justified, although the illuminating power of the gas and the apparatus used in its manufacture are both kept secret. If kimmeridge clay can be profitably turned to account, as Mr. Moule suggests it will, doubtless, be advantageous, but to describe a gas from an oil-bearing shale as a new artificial light is scarcely justifiable.

COAL AND IRON IN THE UNITED STATES.—The production effected at the Lehigh Coal and Navigation Company's coal mines last year was 909,373 tons, as compared with 799,654 tons in 1872, showing an increase last year of 109,719 tons. The production of the mines under lease by the company declined, however, last year to 171,780 tons, as compared with 215,236 tons in 1872. The production of the company's Summit Mines last year presented a small decrease as compared with 1872. There was an unexpected delay in completing improvements, and some of the old mines gave out in the spring before new ones were ready to supply their places; this was not remedied until October, when the demand fell off, in consequence of the prostration of the iron and other industries using hard coal. About 225 tons of semi-bituminous coal are now consumed every 24 hours at the rolling-mill of the Baltimore and Ohio Railway Company at Cumberland, Maryland, and 600 men are now at work on all time in and about the mill. The coal movement of Pennsylvania still exhibits a decline for this year, as compared with the corresponding period of 1873.

SC-WEALDEN EXPLORATIONS.—From the sixth quarterly report we learn that during the last two months a depth of 359 ft. has been bored, making a total of 671 ft. It will thus be seen that very rapid progress has been made since the diamond process has been used. The borings are still in the kimmeridge clay. In this position indications of petroleum have been noticed, and at depths of from 600 to 700 ft. it was particularly observable. Occasional veins of carbonate of lime have been met with crossing the cores obliquely, and it might thus be supposed that the

beds in these parts were dipping at considerable angles, but the report states that all the beds yet passed through are horizontal. One of the most important results of the exploration has been the discovery of gypsum and other beds which are likely to prove commercially productive. At present a report is being made on the fossils which have been found. It is at present intended to continue the work to a depth of 1000 ft., when it is confidently hoped the paleozoic strata will have been reached, and the problem thus far settled. The committee report that they have sufficient funds for this purpose, and should it be deemed desirable to continue the operations beyond the depth, a conference will be held to consider the matter before soliciting further contributions. The present balance in hand is \$762.48. 4d.

A correspondent of the *Journal Officiel*, writing from Cadiz under date of March 12, gives a very glowing account of the state of commercial activity and material prosperity of the province and port of Huelva (Spain). Removed by the whole length and breadth of the Peninsula from the scene of the present Carlist, and recent cantonal, disturbances, and fostered and encouraged by the energy and capital imported by British and German enterprise, this favoured district has, within the last few years, become the centre (or scene) of a vast mining industry. Iron pyrites, copper pyrites, copper precipitate, bar-copper, and manganese, the produce of the Tharsis, Rio Tinto, Mason's, and other mines, have become in great request for export to foreign markets. Upwards of 90 per cent. of the exports are shipped to Great Britain, and the demand in this country and on the Continent has hitherto been limited solely by the supply. To the important mines just mentioned must be added that of Rio Tinto, at this moment being vigorously developed by an English company.

A glance at the following figures will show the rapid growth of this important trade. When the mining business was first started at Huella, about 1861, the total value of the exports and imports for one year did not exceed 89,000 frs. (3260*l.*). In 1871-2 this total had risen to 17½ millions francs (say, 700,000*l.*), and in 1872-3 to 18½ millions francs (750,000*l.*). The shipping returns show 61 vessels entered and cleared in 1861, and 1107 vessels, with a total of 533,916 tons, entered and cleared in 1871. It will be readily understood that such a large impetus given to the export mining trade the imports, especially of machinery, coal, and coke, have been materially augmented.

Whether it be that the natives of the province of Huelva have been actuated by a desire to make the most of the rising trade of their country, or that the demand for labour has kept the people's hands out of mischief, there can be no doubt about the fact that during the last five or six years, which have seen so much turbulence and bloodshed in less favoured parts of Spain, this province has been remarkable for minding its own business, and for holding aloof from every description of political disturbance. Socialists, cantonalists, and other demagogues have, on several occasions, endeavoured to seduce the people from their work, but the receptions which these incendiaries met was such, that they were glad to escape to more congenial soil. When we consider the incredible fertility of the province for wine, oil, and cereals, its inexhaustible mineral resources, and its exceptionally favourable situation for a large shipping trade, we cannot doubt but that Huelva is destined to see a brilliant and prosperous future, and that at no remote date.

Probably at no time since the Great Laxey Mining Company has been in existence has there been more imperative necessity than at present for all interested in the permanent welfare of the enterprise to give their earnest support to the directors in order to prevent the success of the fresh efforts which are being made to tear the company to pieces by the creation of internal dissension. But for the failure of a few comparatively small shareholders to leave the settlement of matters, unquestionably within the province of the executive to settle, in the hands of the gentlemen occupying the position of resident or acting members of the board of direction, it is probable that what is now looked back to with regret as "the great strike" would never have assumed the dimensions it did, and would never have caused such irreparable loss to both shareholders and workmen, and yet a certain proportion of the shareholders are again rushing headlong into a similar mistake. The accounts which were issued to the shareholders, and referred to in last week's Journal, should suffice to satisfy the shareholders that the mine is making large profits, since they show a credit balance of 573*g*., after paying a dividend of 750*0*l. in November, notwithstanding the fact that the price of lead is lower, and that all the difficulties (now happily passing away) of increased cost of labour and materials had to be contended with.

In the face of the facts before him, Mr. DEARDEN and his party declare it to be their opinion that the existing depression of the Great Laxey Mining property arises mainly from improper working and defective management, and contemplate the formation of a committee of shareholders for the purpose of making a reliable investigation into the affairs of the company and the working of the mine generally, and of obtaining any changes that be found desirable. It is evident, says Mr. DEARDEN, that the mine, without any diminution in the richness of its yield, is verging on the ruinous condition of the expenditure exceeding the income. Acting upon this erroneous impression—for it cannot be supposed any gentleman would knowingly sacrifice the welfare of a prosperous concern for his own personal advantage, or to run down the price in order to increase his own interest at the expense of his co-partners—Mr. DEARDEN proposes to submit a motion at the meeting, on April 8, which he states will probably take the form of a committee to investigate and report, and he has sent a circular and solicited proxies to enable him to carry out his views. But, although the opposition of Mr. DEARDEN and his party may prove, by the amount of support he obtains at the meeting, to be insignificant, the prejudicial effect which it must have upon the company cannot be doubted.

The answer of the Chairman, however, is complete and suggestive. Mr. DUMBELL observes that Mr. DEARDEN has comparatively only recently become a shareholder in the company; but during that time he has made himself extremely disagreeable to the directors and managers of the mine; and, whilst finding fault with everything connected with the mine, continues to increase his number of shares in the company. Mr. DEARDEN's circular has the printed names of 23 shareholders, exclusive of his own, which, considering there are more than 500 shareholders in the company, is, Mr. DUMBELL is naturally pleased to see, a very meagre proportion of the whole. Again, out of 15,000 shares in the company, these parties only profess to represent 1738, while the directors alone hold more than 2000 shares. Mr. DEARDEN and his party state that they seek at the meeting of the company in London, on April 8, to propose and pass a resolution for the appointment "of a committee to investigate and report;" and, in order to carry such a motion, Mr. DEARDEN is now by his circular canvassing the shareholders for votes. A more mischievous course can hardly be conceived. In the confusion that would certainly ensue shares in the company would fall to a mere nominal value, and no doubt some individuals would largely increase their number of shares at eventually a large profit, at a grievous loss to many of the present holders.

The principal statement, Mr. DUMBELL continues, upon which Mr. DEARDEN seeks to carry his motion is where he says "It is evident that the mine, without any diminution in the richness of its yield, is verging upon the ruinous condition of the expenditure exceeding the income." This, Mr. DUMBELL says, "is not true," though probably most of the shareholders were fully convinced of this before Mr. DUMBELL'S reply reached them, and he adds that the best proof to the contrary is that it is arranged at the usual meeting of directors in London on April 7 (the day previous to the general meeting of the company) to declare payment of a dividend to the shareholders. As regards the motion Mr. DEARDEN proposes to bring forward at the meeting, Mr. DUMBELL very properly says that he should consider the passing of such a resolution a direct insult to himself and the other directors, and nothing could induce him to continue as a director if such an insult were offered to him by the shareholders. He has not had an opportunity of seeing the other directors, but has every reason to believe they will take the same view of the matter. Mr. DUMBELL has been a shareholder in Laxey

for 40 years, and for more than 30 years a director, and has never received one shilling of remuneration; but he declines to submit to be insulted at the instance of Mr. DEARDEN or any of his party.

That the shareholders generally have sufficient confidence in the board to prevent the opposition being successful is confidently believed, but it is essential that all should be upon their guard against any movement calculated to lead weak or timid shareholders to lose their interests in the mine through failure to comprehend the true nature and intention of the opposition.

April 2.—The Coal and Iron Trades of South Staffordshire have been brought to a virtual dead-lock by the strike of 15,000 colliers and the consequent stoppage of the greater part of the fuel supply of the district. A final attempt to avert this calamity was made last Friday evening at a meeting of coalmasters and representative miners held at Dudley under the presidency of Mr. Fisher Smith. The coalmasters saw no reason to depart from the resolution passed at the meeting held in Birmingham three weeks ago, reducing the wages of thick-coal miners 1s. and thin-coal miners 9d. per day. On learning that the masters would abide by the resolution the delegates announced that on the expiration of the notices on the following day (Saturday) a strike would commence throughout the whole of the South Staffordshire district. Some of the small firms, and one or two large ones not in connection with the Trade Association, are employing their miners at the old rate of wages, but the output of these mines bears only a small proportion to the total average yield of the whole district. How long this disastrous state of affairs will continue remains to be proved, but there are no indications of a speedy settlement. On the contrary, both sides seem to be preparing for a lengthened resistance. House coal has been advanced by the local merchants 3s. 4d. per ton.

The following pig-iron makers in South Staffordshire have either damped down or altogether extinguished their blast-furnaces, and there is reason to fear that a considerable addition to the list will shortly have to be made:—Priorsfield Company, 3; Roberts and Co., Tipton Green, 2; Willingsworth Company, 1; G. B. Thorneycroft and Co., 1; Round and Co., 1; Cochrane and Co., 3; Grouett and Co., 3; D. Rose, 1; Barborsfield Company, 2; Parkfield Company, 1; A. Hickman, 1; Chillington Company, 2; Bilston Brook, 1; Jones (Birchells), 1; Geo. Hickman, 1; Darlston Steel and Iron Company, 2; Solly and Urwick, 1; John Bagnall and Sons (calcining furnaces), 2. The majority of these furnaces are altogether blown out. The diminished consumption of fuel represented by the figures quoted is something enormous. There is no business doing in pig-iron worth notice, and the range of prices is, therefore, virtually nominal at 4*l.* for common cinder to 7*l.* for all-mine. The finished iron branch of the trade is without feature since our last notice. The mills and forges will be closed this week for the Easter holidays, and the ironmasters as a rule will not be sorry for this temporary suspension of operations. The present condition of the iron trade in all branches has been aptly described as "stale, flat, and unprofitable." Common bars are quoted 11*l.*, and marked ditto 14*l.* per ton, other classes of finished iron being in the usual proportion.

Yesterday (Wednesday), at Wolverhampton, a meeting of ironmasters and ironworkers was held to discuss the wages question, and the representatives of the men offered such concessions as will most probably put an end to the dispute at the adjourned meeting, to be held in London on Wednesday next.

Sandwell Park Colliery shares are quoted 350, buyers; Chillington Iron 7, sellers; John Bagnall and Sons (Limited), $7\frac{3}{4}$ to 8; Patent Shaft and Axle, $6\frac{1}{4}$ prem., sellers; Patent Nut and Bolt, $2\frac{1}{2}$ prem., sellers; and Cannock and Huntington Colliery Company, $\frac{1}{8}$ prem.

The trial borings on the Cannock and Huntington Colliery Company's estate is now making satisfactory progress. The work is being conducted by the Diamond Rock Boring Company. The pebble beds have been passed through, and a stratum has been reached which correlates with the measures in other parts of the Cannock Chase field, under which very rich coal deposits have been found at an easy workable depth. Should the promises of success at present held out by this undertaking be realised it will prove only second in importance to the Sandwell Park enterprise, seeing that it will go far to establish the theory as to the correlation of the South Staffordshire and Shropshire coal fields.

In the North Staffordshire district a strike in the coal trade has been averted by a timely concession on the part of the men, who have agreed to a reduction of 10 per cent. The business doing, however, either in the coal or iron trade is very limited, and there does not seem much prospect of an early improvement.

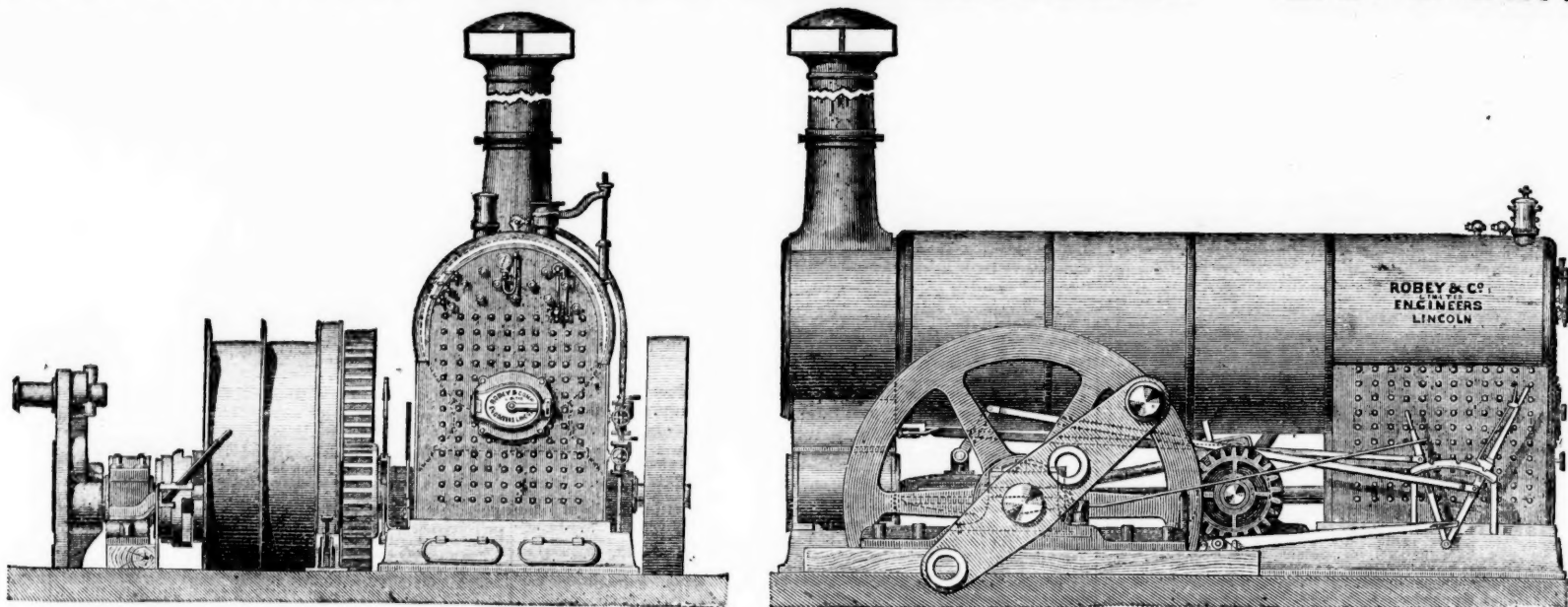
April 2.—We are inclined to agree with the remark made by Mr. Wellington, at the Providence meeting, that the present is the darkest cloud that has overshadowed Cornwall within the present generation. But, what then? The stormiest day must have an end; there is sunshine as well as gloom; and with him also we are not at all disposed to look solely upon the dark side of things. Still the serious nature of the present conjuncture cannot be concealed. The renewed drop in the tin standard—if, indeed, there can now be said to be such a thing as a standard in the old sense—of the present week has brought it down to a point disagreeably close to that of the last depression, but, unfortunately, the conditions are unequal, and the additional cost of coals, which do not fall by any means as rapidly as was anticipated, more than makes up for the trifling margin on the price of tin. Yet, go where one will in the county, nine out of ten of those by whose opinions we should be guided in ordinary times say that they believe the depression is but temporary, and that the darkest hour, which invariably precedes the dawn, cannot be far off. At the same time, there is a manifest lack of spirit and enterprise among the general public, and the metal market must recover appreciably before confidence will revive. Of course, we are beset with rumours of the immense quantities of Australian tin on its way home, and it is of very little use saying that one does not believe it, when the buying is all in the hands of those who say they do. It is a pity our leading tin mines had not clubbed together and sent out a competent person to see what these much-vaunted deposits of tin really are; not that it much matters at present prices, for no one in his senses believes that, taking into consideration the extra cost of labour in Australia, with the charge of freight, and the uncertain water supply, it can pay Australians to send home tin for 50*l.* a ton.

The market may be overstocked for awhile, but it cannot remain so. The demand for the metal is clearly increasing, and a few more weeks like those which we have lately had in Cornwall will reduce the supply very materially. Why, the restriction of operations at Wheal Owles and Botallack, and the minor changes in that district, will lessen the output by something like 500 tons a year; and when to that we add the restriction of operations at Wheal Vor, and the abandonment of such mines as North Crofty, North Roskear, besides the smaller concerns that are either "knocked" now, or are not far removed from that consummation, it does not seem at all unlikely that by the middle of the year the reduction in the tin raised in Cornwall will be nearer 2000 tons than anything else—of course, speaking roughly. Setting this against the Australian imports—which we hold under present circumstances must diminish—it seems reasonable to expect that a fair season of prosperity is in store for the mines that survive the present ordeal.

As we have said before, if ever there was a time when all who are interested in mining should put their shoulders to the wheel, and help to keep the machine moving, "One and All," it is now. The ords, especially, may be called upon to aid. Times such as these show in the most forcible manner the evil of the dues system as at present worked, which we have so often condemned. If dues were only paid on profits, as they ought to be, instead of upon the gross returns, there would be no need of those special applications for reductions which are now being made upon all hands, and which are, in a few instances, being so liberally met. There are, indeed, some owners whom nothing short of the absolute ruin of their mineral

DING-DONG is apparently the model bal of the county. It raised about 76 tons of tin last quarter. "What of that?" promptly ejaculates some. "If it had not raised any tin, so much the better for other struggling concerns." Yes; but at its meeting on Tuesday it was shown that the wages paid the previous Friday were charged, and not only every penny of the men's pay but all known or ascertainable liabilities! What other mine can say "ditto" to the last fact? Surely Ding-Dong cost book would satisfy the most uncompromising of steklers for close charging up. But it can at a day's notice increase its yield of fact, and convert its smaling up profit of 10¢ into a much larger one. It does not. It is mainly held by smelters. Is not that one little circumstance suggestive of those who can see as far as most of us are a league of better times?—*Cornell Gazette.*

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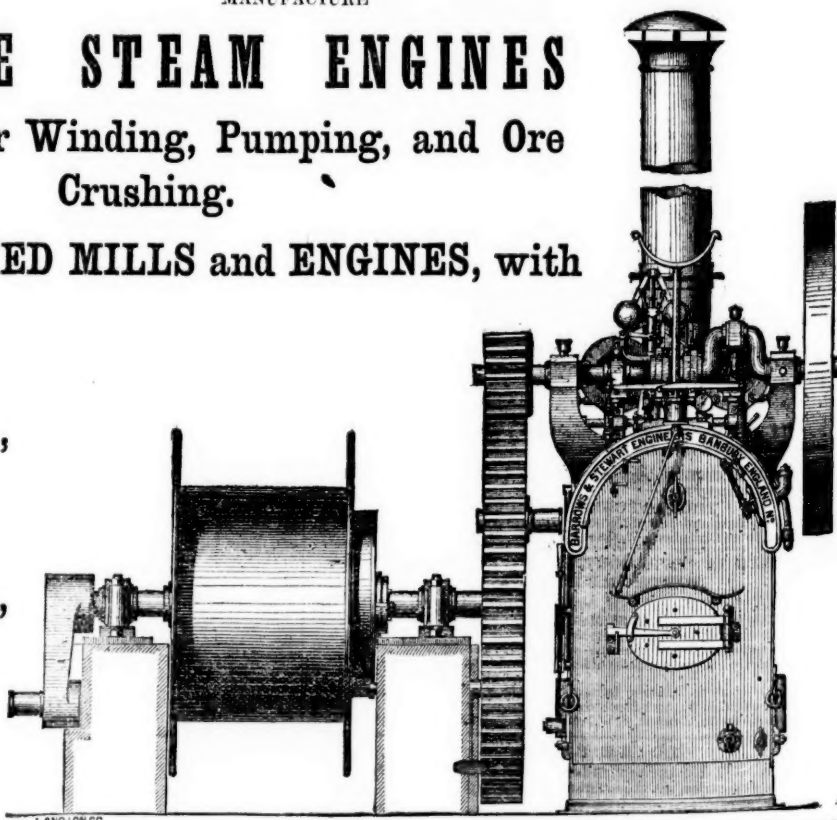
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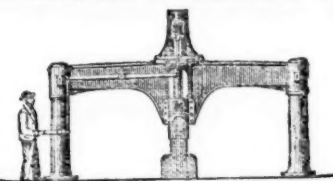
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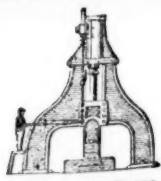
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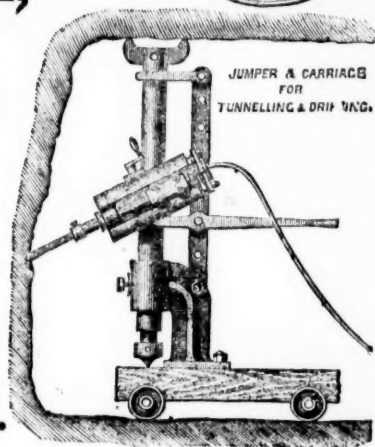
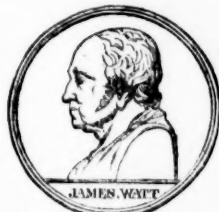
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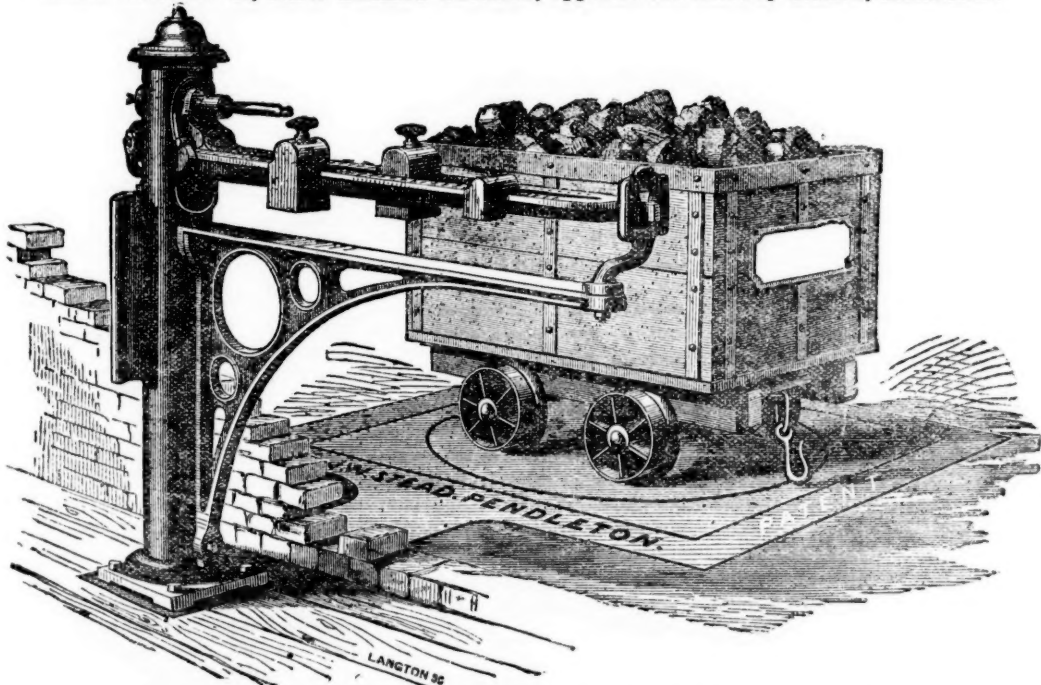
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1500	Alderley Edge, c. Cheshire*	10 0 0	—	—	11 16 8	0 5 0	Oct. 1873
20000	All-y-Crib, c. Talybont*	2 0 0	—	—	0 0 6	0 0 6	Feb. 1873
50000	Bampfylde, c. i. m., Devon*	1 0 0	—	—	0 2 0	0 2 0	June 1873
5000	Blaen Caelan, s. i. Cardigan* (44 sh.)	3 10 0	—	—	0 10 9	—	—
15000	Boswell Down, c. St. Just*	1 0 0	—	—	0 5 6	0 5 6	Oct. 1871
200	Botallack, c. St. Just*	1 0 0	—	—	0 15 0	—	—
5000	Brookwood, c. Buckfastleigh	1 10 0	—	—	0 15 0	—	—
3348	Cargill, s. i. Newlyn	4 17 11	—	—	0 15 0	—	—
7500	Castle an Dinas, c. St. Columb*	2 0 0	—	—	0 10 0	—	—
1000	Carn Brea, c. i. Illogan*	35 0 0	—	—	0 10 0	—	—
6000	Cath. & Jane, c. i. Penrhynendrach	5 0 0	—	—	0 10 0	—	—
2450	Cook's Kitchen, c. Illogan*	20 4 9	—	—	0 10 0	—	—
10240	Devon Gt. Consols, c. Tavistock*	0 12 0	—	—	0 10 0	—	—
4296	Dolestone, c. i. Camborne*	10 14 10	—	—	0 10 0	—	—
10000	East Ballewidden, c. Llantrisant*	1 0 0	—	—	0 10 0	—	—
6144	East Caradon, c. St. Cleer*	2 14 6	—	—	0 10 0	—	—
300	East Darren, c. i. Cardigan*	32 0 0	—	—	0 10 0	—	—
6400	East Pool, c. i. Illogan*	0 9 9	—	—	0 10 0	—	—
5000	Exmouth, c. i. Christow*	0 7 6	—	—	0 10 0	—	—
2800	Foxdale, c. i. Isle of Man*	25 0 0	—	—	0 10 0	—	—
40000	Glasgow Carr, c. i. (30,000 £1 p., 10,000 15s. p.)	—	—	—	0 10 0	—	—
15000	Great Laxey, c. i. Isle of Man*	4 0 0	—	—	0 10 0	—	—
25000	Great West Van, c. i. Cardigan*	2 0 0	—	—	0 10 0	—	—
6000	Green Hurth, c. i. Durham*	40 15 0	—	—	0 10 0	—	—
1024	Herodford, c. i. near Liskeard*	8 10 0	—	—	0 10 0	—	—
12000	Hingham Downs, c. i. Calstock* (41 sh.)	1 0 0	—	—	0 10 0	—	—
25000	Kilbuck, c. i. Tipperary	1 0 0	—	—	0 10 0	—	—
4000	Liaburn, c. i. Cardigan*	18 15 0	—	—	0 10 0	—	—
5120	Lovell, c. i. Wendron	0 10 0	—	—	0 10 0	—	—
9000	Minera Mining Co. c. i. Wrexham*	5 0 0	—	—	0 10 0	—	—
20000	Mining Co. of Ireland, c. i. c. l.*	7 0 0	—	—	0 10 0	—	—
12000	North Hendre, c. i. Wales	2 10 0	—	—	0 10 0	—	—
10000	North Llewellyn, c. i. St. Just*	11 9 6	—	—	0 10 0	—	—
27000	Old Treborth, c. i. s. i. (10 per cent. pref.)	1 0 0	—	—	0 10 0	—	—
5000	Old Treborth, c. i. s. i. (10 per cent. pref.)	1 0 0	—	—	0 10 0	—	—
5000	Penarth, c. i. St. Agnes	3 0 0	—	—	0 10 0	—	—
6000	Penarth, c. i. St. Agnes	3 0 0	—	—	0 10 0	—	—
1772	Polbarn, c. i. St. Agnes	15 0 0	—	—	0 10 0	—	—
18000	Prince Patrick, c. i. s. i. Holywell	1 0 0	—	—	0 10 0	—	—
1120	Providence, c. i. Llanelli (last call Mar. 74)	3 0 0	—	—	0 10 0	—	—
12000	Roman Gravel, c. i. Salop*	7 10 0	—	—	0 10 0	—	—
10000	Shelton, c. i. St. Austell*	1 0 0	—	—	0 10 0	—	—
6000	Simford Breasing, c. i. Calstock*	1 0 0	—	—	0 10 0	—	—
512	South Caradon, c. i. St. Cleer*	1 0 0	—	—	0 10 0	—	—
5000	South Caradon, c. i. St. Cleer*	1 0 0	—	—	0 10 0	—	—
6000	South Darren, c. i. Cardigan*	3 6 0	—	—	0 10 0	—	—
8771	St. John Amalgamated, c. i. s. i.	3 10 0	—	—	0 10 0	—	—
12000	Tankerville, c. i. Salop*	6 0 0	—	—	0 10 0	—	—
30000	Terras, c. i. St. Austell*	1 0 0	—	—	0 10 0	—	—
4000	Timcroft, c. i. Pool, Illogan*	9 0 0	—	—	0 10 0	—	—
15000	Truro Consols, c. i. Helston	6 5 0	—	—	0 10 0	—	—
15000	Van, c. i. Llanidloes*	4 5 0	—	—	0 10 0	—	—
3000	W. Chertsey, c. i. Perranarabuth*	1 0 0	—	—	0 10 0	—	—
2048	West Wheal Frances, c. i. Illogan*	27 3 9	—	—	0 10 0	—	—
512	Wheal Bassett, c. i. Illogan*	5 2 6	—	—	0 10 0	—	—
4295	Wheal Kitty, c. i. St. Agnes	5 4 6	—	—	0 10 0	—	—
898	Wheal Margaret, c. i. s. i. Llanelli	13 17 6	—	—	0 10 0	—	—
10000	Wheal Mary, c. i. St. Dennis*	5 0 0	—	—	0 10 0	—	—
1024	Wheal Mary Ann, c. i. Menheniot*	10 0 0	—	—	0 10 0	—	—
80	Wheal Owles, c. i. St. Just*	70 0 0	—	—	0 10 0	—	—
12000	Wheal Russell, c. i. Tavistock*	1 0 0	—	—	0 10 0	—	—
1558	Wheal Taron, c. i. c. i. Camborne*	73 0 0	—	—	0 10 0	—	—
15000	Wheal Taron, c. i. c. i. Camborne*	1 0 0	—	—	0 10 0	—	—
10000	Wheal Taron, c. i. c. i. Camborne*	1 0 0	—	—	0 10 0	—	—
25000	Wicklow, c. i. s. i. c. i. Wicklow	2 10 0	—	—	0 10 0	—	—

FOREIGN DIVIDEND MINES.

Shares.	Mines.	Divid.	Last Pr.	Clas. Pr.	Total divs.	Per share.	Last paid.
25000	Alamillos, c. i. Spain*	2 0 0	—	—	1 3 0	0 2 0	Mar. 1874
50000	Ambrosio, c. i. Tinto Consol. s. i.	1 0 0	—	—	0 4 3	0 1 0	July 1873
20000	Australian, c. i. South Australia*	7 7 6	—	—	0 10 0	—	—
10000	Battle Mountain, c. i. s. i. (24000 pd.)	5 0 0	—	—	0 10 0	—	—
15000	Birdseye Creek, c. i. California*	4 0 0	—	—	0 10 0	—	—
6000	Bensberg, c. i. Germany*	10 0 0	—	—	0 10 0	—	—
12320	Burra Burra, c. i. s. i. Australia*	5 0 0	—	—	0 10 0	—	—
20000	Cape Copper Mining, c. i. s. i. Africa*	7 0 0	—	—	0 10 0	—	—
40000	Cedar Creek, c. i. California*	5 0 0	—	—	0 10 0	—	—
30000	Central American Association*	0 15 0	—	—	0 10 0	—	—
1500	Chicago, c. i. Utah*	7 0 0	—	—	0 10 0	—	—
21000	Colorado Territory, c. i. Colorado*	10 0 0	—	—	0 10 0	—	—
76162	Don Pedro del Rey, c. i. s. i.	0 10 0	—	—	0 10 0	—	—
23500	Eberhardt and Aurora, c. i. Nevada*	10 0 0	—	—	0 10 0	—	—
2352	Eldorado, c. i. s. i. Nevada*	10 0 0	—	—	0 10 0	—	—
60000	Emma, c. i. s. i. Utah (25,000 fully pd.)	20 0 0	—	—	0 10 0	—	—
70000	English and American, c. i. St. Austell*	2 10 0	—	—	0 10 0	—	—
15000	Ferguson, c. i. California*	2 0 0	—	—	0 10 0	—	—
5000	Flagstaff, c. i. Utah*	10 0 0	—	—	0 10 0	—	—
25000	Gold Run, c. i. Spain*	2 0 0	—	—	0 10 0	—	—
60000	Gold Run, c. i. Spain*	1 0 0	—	—	0 10 0	—	—
60000	Kapunda Mining Co. c. i. Australia*	1 0 0	—	—	0 10 0	—	—
20000	Last Chance, c. i. Utah*	5 0 0	—	—	0 10 0	—	—
15000	Linares, c. i. Spain*	3 0 0	—	—	0 10 0	—	—
7837	Lusitania, Portugal* (45 shares)	3 0 0	—	—	0 10 0	—	—
15000	Mammoth Copperopolis of Utah, c. i. s. i.	10 0 0	—	—	0 10 0	—	—
5000	Mountain Chief, c. i. Utah*	10 0 0	—	—	0 10 0	—	—
18000	Prussian Mining and Ironworks, c. i. s. i.	30 0 0	—	—	0 10 0	—	—
10000	Pontgibaud, c. i. France*	20 0 0	—	—	0 10 0	—	—
100000	Port Phillip, c. i. Clunes*	1 0 0	—	—	0 10 0	—	—
44000	Richmond Mining Co. c. i. Nevada*	1 0 0	—	—	0 10 0	—	—
120000	Scottish Australian Mining Co. c. i. s. i.	1 0 0	—	—	0 10 0	—	—
112500	Sierra Buttes, c. i. California*	2 0 0	—	—	0 10 0	—	—
15000	South Aurora, c. i. Nevada*	5 0 0	—	—	0 10 0	—	—
15000	Sweetland Creek, c. i. California*	4 0 0	—	—	0 10 0	—	—
2000	Tolima, c. i. s. i. (8000 sh. are 45 f. pd.)	4 0 0	—	—	0 10 0	—	—
8000	Westphalian, c. i. c. i. Prussia*	20 0 0	—	—	0 10 0	—	—
15000	Western Andes, c. i. s. i. (8000 45 f. pd.)	3 10 0	—	—	0 10 0	—	—

NON-DIVIDEND FOREIGN MINES.

Shares.	Mines.	Divid.	Last Pr.	Clas. Pr.	Last Call.
50000	Anglo Argentine, <i>g</i> , s. ** (15 per cent. Preference).....	1 0 0	—	34...	...Fully pd.
20000	Anglo Australian, <i>g</i> , s. Victoria*	2 10 0	—	—	...Sept. 1872
50000	Australian United, <i>g</i> , s. Victoria*	2 10 0	—	35...	...Fully pd.
3000	Bellavista, <i>s</i> , Peru* (£10 shares).....	10 0 0	—	—	...Fully pd.
50000	Blue Tent, <i>h</i> , <i>l</i> , California.....	5 0 0	—	—	...Fully pd.
50000	Braganza, <i>g</i> , Brazil*.....	0 15 0	—	—	...Oct. 1870
12000	Camp Floyd, <i>s</i> , Utah*.....	10 0 0	—	—	...Fully pd.
35000	Cesena Sulphur Company, Romanga, Italy*.....	10 0 0	—	—	...Fully pd.
60152	Chontales, <i>g</i> , s, Nicaragua* (and 12,542 of £1 15s.).....	2 0 0	—	75...	...Fully pd.
6000	Clifton, <i>s</i> , Colorado*.....	5 0 0	—	—	...Feb. 1872
10000	Crescent, <i>g</i> , Plumas County, California*.....	10 0 0	—	—	...Fully pd.
100000	Culaba, <i>g</i> , Minas Geraes, Brazil*.....	0 17 6	—	—	...June 1872
20000	Douglas, <i>g</i> , s, Georgia, Col.	5 0 0	—	—	...Fully pd.
7500	East Sheboygan Preference* (40,000 ordinary shares).....	5 0 0	—	—	...Fully pd.
35000	Excelsior Hydraulic Gold Washing Co., California*.....	6 0 0	—	—	...Sept. 1871
60000	Exchequer, <i>g</i> , s, California*.....	1 0 0	—	—	...Fully pd.
55000	Frontino and Bolivia, <i>g</i> , New Granada*.....	2 0 0	—	34...	...Fully pd.
50000	General Brazilian, <i>g</i> *.....	1 0 0	—	—	...Fully pd.
10000	Getzel Tunnel Co., Georgetown, Col.	7 0 0	—	—	...Fully pd.
40000	Holcombe Valley, <i>g</i> , s, California.....	1 0 0	—	—	...July 1873
6000	Honachos, <i>s</i> , <i>l</i> , (£10 shares).....	7 0 0	—	—	...Jan. 1874
10000	Hudson, <i>g</i> , California.....	3 0 0	—	—	...April 1873
20000	Imperial Brazilian Collieries, Brazil*.....	5 0 0	—	—	...Fully pd.
20000	I. X. L., <i>g</i> , s, California*.....	5 0 0	—	—	...Fully pd.
50000	Javali, <i>g</i> , Nicaragua*.....	2 0 0	—	34 3/4	...Fully pd.
31000	Kansas, <i>g</i> , Colorado*.....	5 0 0	—	—	...Fully pd.
12000	Lanestosa, <i>s</i> , <i>l</i> , <i>s</i> , Viscaya, Spain (£2 shares).....	1 10 0	—	—	...Fully pd.
150000	London and California, <i>g</i> , s*.....	3 0 0	—	—	...Fully pd.
75000	Malabar, <i>g</i> , Colombia* (65000 issued).....	1 0 0	—	75...	...Fully pd.
4000	Malaga, <i>l</i> , Spain*.....	10 0 0	—	—	...Fully pd.
20000	Malpaso, <i>g</i> , Colombia*.....	1 0 0	—	34 1	...Fully pd.
12000	Menzenberg, <i>g</i> , Honnef, Germany*.....	5 5 0	—	—	...Fully pd.
14000	Montague & Waverley Gold Quartz Crushing Co., N. Scot.	2 0 0	—	—	...Allotment
6000	Monte Loretto, <i>g</i> , s, Nevada*.....	5 0 0	—	—	...Fully pd.
15000	New Pacific, <i>g</i> , s, Nevada*.....	0 7 6	—	34 3/4	...Jan. 1874
55000	New Quebrada, <i>g</i> , Venezuela*.....	5 0 0	—	34 3/4	...Fully pd.
20000	New Rosario, <i>s</i> , Mexico*.....	1 0 0	—	34 3/4	...Fully pd.
20000	New Zealand Kapanga, <i>g</i> , Coromandel*.....	5 0 0	—	—	...Fully pd.
10000	Newfoundland, <i>s</i> , <i>l</i>	10 0 0	—	—	...Fully pd.
20000	North American, <i>g</i> , s.....	4 0 0	—	—	...Fully pd.
50000	Panuelillo, <i>g</i> , Chili*.....	4 0 0	—	1 1/2 3/4	...Fully pd.
80000	Pastorena United, <i>g</i> , Italy*.....	3 0 0	—	35...	...Fully pd.
50000	Rica, <i>g</i> , Colombia* (40000 issued).....	1 0 0	—	35 3/4	...Fully pd.
60000	Rio Tinto, <i>g</i> , s, Huelva, Spain.....	6 10 0	—	61 1/2	...Fully pd.
25000	Ross Grande, <i>g</i> , Brazil* (41 shares).....	0 19 0	—	74 7/8	...Jan. 1874
25000	Ruby Consolidated, <i>s</i> , Nevada*.....	10 0 0	—	35 1/2	...July 1872
20000	Russia, <i>g</i> , s, Orenburg and Uta*.....	10 0 0	—	34 3/4	...Fully pd.
25000	San Pedro, <i>g</i> , Chili*.....	2 0 0	—	14 1/4	...Fully pd.
30000	Santa Barbara, <i>g</i> , s, Brazil*.....	0 7 6	—	34 3/4	...Mar. 1872
15000	Saturn, <i>s</i> , Utah*.....	5 0 0	—	—	...Fully pd.
10000	Silver Plume, <i>s</i> , Colorado*.....	1 0 0	—	—	...Fully pd.
37500	Snowdrift, <i>s</i> , Colorado*.....	2 0 0	—	—	...Fully pd.
2500	St. John del Rey, Brazil*.....	100 0 0	—	205	...Oct. 1872
25000	Star of Nevada, <i>g</i> , s, s, (2000 issued).....	2 0 0	—	—	...Fully pd.
30000	Tecoma, <i>s</i> , Utah*.....	1 0 0	—	1	...Fully pd.
20000	Thornhill Reef, <i>g</i> , Australia*.....	2 0 0	—	34 3/4	...Fully pd.
43174	United Mexican, <i>s</i> , Mexico*.....	28 7 8	—	24 1/2	...Mar. 1868
14000	Utah, <i>g</i> , s, <i>l</i> , Utah* (£5 sh.).....	4 10 0	—	14 1/2	...Oct. 1873
75000	Yorke Peninsula, <i>g</i> , South Australia.....	1 0 0	—	34 3/4	...Fully pd.
5000	Yucatanmatana, <i>g</i> , South Australia*.....	3 0 0	—	—	...Fully pd.